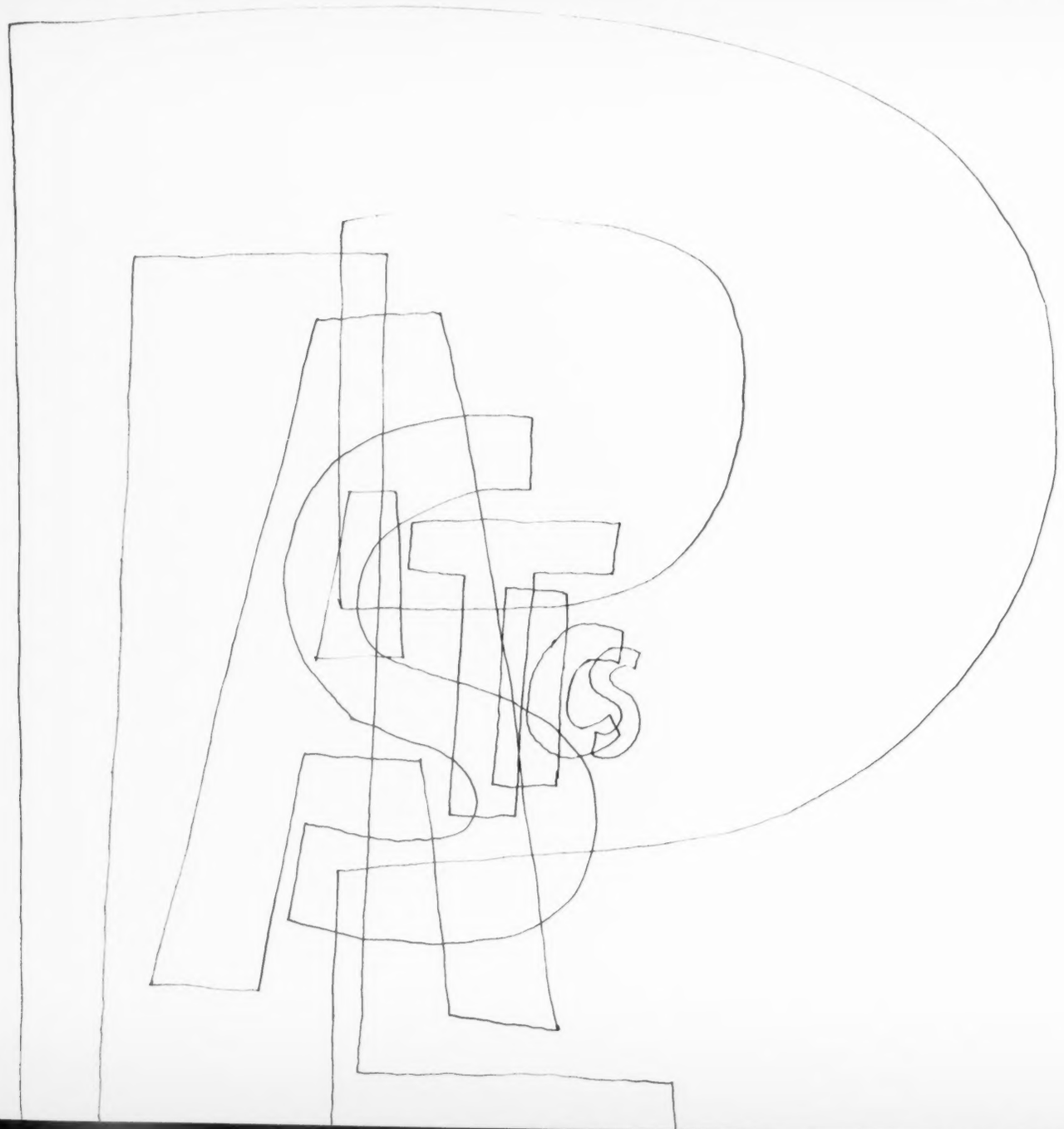
LY 1960 VOLUME 2 NUMBER 7

architectural & engineering NEWS



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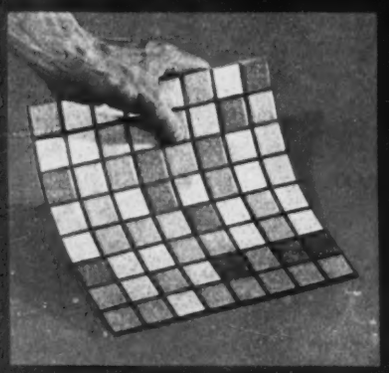

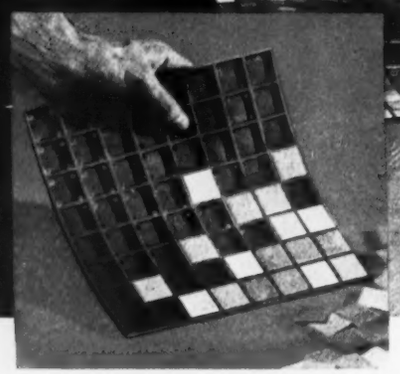

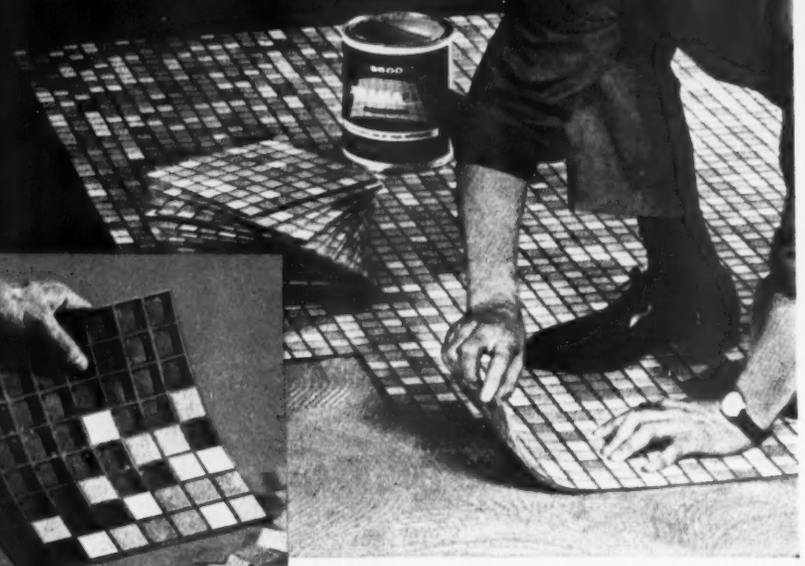

Plate No. 1099

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architectural & engineering NEWS

This issue features material on the application of plastics in architecture. The cover design by Blechman-Palladino, serves as a graphic statement on the feature content.

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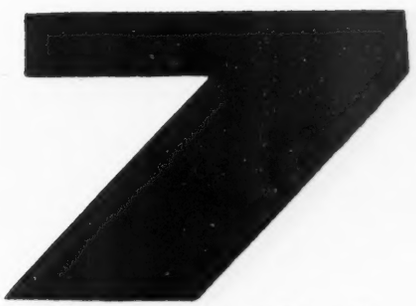

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GAZETTE

Jack C. Smith, principal planning consultant of New York City's Dept. of City Planning, appointed chief, Office of Master Planning, by James Felt, chairman.

Lawrence M. Orton, charter member of New York's City Planning Commission, awarded Medal of Honor for City Planning, jointly awarded by Metropolitan Section of *American Society of Civil Engineers*, New York Chapter of *American Society of Landscape Architects* and the Brooklyn and New York Chapters of *The American Institute of Architects*.

George Nelson, AIA, announces George Nelson and Co., Inc., industrial designers, is expanding to include representation on the west coast.

Harry Clay Bates, president of the *Bricklayers Masons & Plasterers International Union of America*, has retired for reasons of health. He will continue as president emeritus and will serve as chairman of the Board of Trustees. John J. Murphy, current secretary, will succeed Bates.

John H. Fisk named assistant to the secretary of *American Society of Civil Engineers*. His assignment will concern the organization's student chapters.

George I. Smith, manager of the Acoustical Dept. of the Celotex Co., Chicago, elected president of *Acoustical Materials Assn.*, at the organization's annual meeting.

William Bachman, president of Chicago Chapter of *The American Institute of Architects*, named to jury of woodwork finishes competition, sponsored by *The American Walnut Mfrs. Assn.*

Philip W. Cloyes elected president; Robert W. DeLazzero, vice-president; Bart Arconti, Jr., director, zone 1; Cesare Favarato, director, zone 2; William Ramsay, III, director, zone 3; Adolph N. Martini, director, zone 4; and Remo De Carli, Canadian director, of *National Terrazzo & Mosaic Assn.*, at thirty seventh annual convention. Toronto, Canada selected as site of thirty-eighth annual meeting.

Wallace K. Harrison, FAIA, appointed chairman of the design board for the 1964 New York World's Fair. Gordon Bunshaft, FAIA, and Edward Durell Stone, FAIA, were named to assist him.

United States Department of State has announced the appointments of: Earnest Watson, Dean of the Faculty, California Institute of Technology, as Science Officer for New Delhi; Neal Weber, professor of Zoology, Swarthmore College, as Science Officer for Buenos Aires; Harry W. Wells, Chairman, Upper Atmospheric Section, Carnegie Institution of Washington, as Science Officer for Rio de Janeiro; John B. Bateman, biophysicist, U. S. Army

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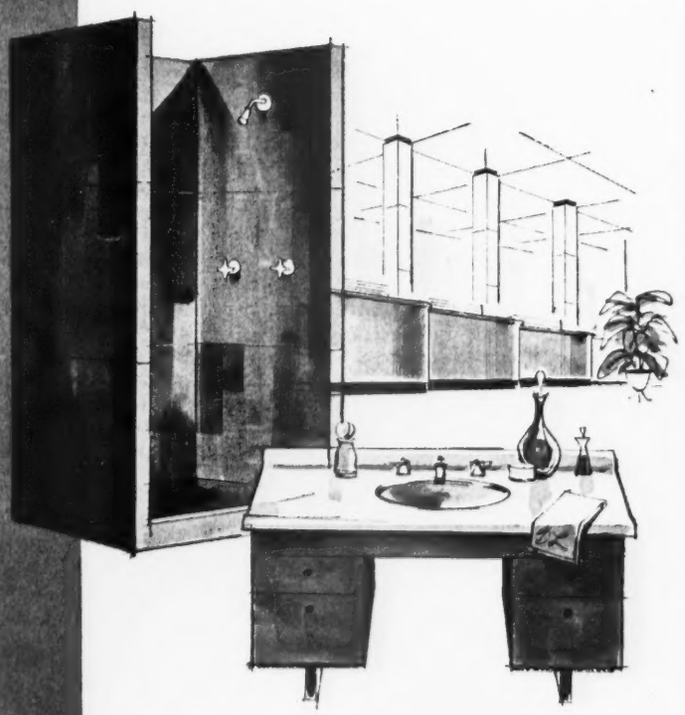

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GAZETTE

Chemical Corps, as Deputy Science Officer for London; William Littlewood, zoologist and oceanographer, U. S. Navy Hydrographic Office, as Deputy Science Officer for Stockholm; David C. Rife, International Cooperation Administration Adviser to the Government of Thailand, and formerly professor of Zoology, Ohio State University, as Deputy Science Officer for New Delhi; and Marshall Crouch, professor of Physics, Case Institute of Technology, as Deputy Science Officer for Tokyo.

Joe W. Kelley elected president; Raymond C. Reese, vice-president; and A. Allan Bates, Bruce E. Foster, Ben C. Gerwick, Jr., and James A. McCarthy, members of Board of Direction, at fifty-sixth annual convention of *American Concrete Institute*.

Soloman J. Lim, graduate of Oklahoma State University with degrees in Architecture and Architectural Engineering, appointed architectural associate by Good Design Associates, South Bend, Indiana.

W. H. Owens, formerly chief engineer and manager of product development, appointed division staff engineer by The Philip Carey Mfg. Co., Cincinnati, Ohio.

Architect-builder group, Jones & Emmons, Los Angeles; Anshen & Allen, San Francisco; and Joseph L. Eichler, Palo Alto, is winner of first annual AIA-NAHB Award of Honor. Award was initiated "to encourage the design and construction of the best communities and homes for the American people by promoting collaboration between architects and builders."

Clarence S. Stein, FAIA, presented Ebenezer Howard Memorial Medal by England's Town and Country Planning Assn.

Announcement made of formation of Continental Controls Co., N. H., an organization specializing in electrohydraulic control components and systems.

Robert B. Middlebrook, John H. St. Germain and Arthur Klein elevated to rank of Associate by Kelly & Gruzen, Architects-Engineers of New York and Newark.

William E. Dickinson, formerly vice-president and chief engineer of the *Calcium Chloride Institute*, elected executive vice-president of that organization.

Professor Charles H. Scholer, Manhattan, Kansas, and William Lerch, Chicago, presented honorary memberships in the *American Concrete Institute*, at the fifty-sixth annual convention.

Edmund D. Bacon, executive director of Philadelphia City Planning Commission, named Professional Advisor for Franklin Delano Roosevelt Memorial Competition.

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FORECAST

IS A PLASTICS BREAKTHROUGH IN BUILDING DUE IN THE SIXTIES?

From an address delivered by Albert G. H. Dietz, Professor of Building Engineering, Massachusetts Institute of Technology, before the national meeting of The Society of the Plastics Industry.

The answer to the question posed in the title is a conditional "Yes." Plastics may well achieve a real breakthrough in building during the sixties. Many favorable factors exist; there is great interest in plastics on the part of the building industry, and the plastics industry in turn realizes the enormous potential offered by building. But the breakthrough will not be automatic, inevitable and self-generating. The plastics industry will have to exert itself to make it happen. It must appraise both the advantages possessed by plastics and their real limitations and must learn to make the most of the advantages while overcoming or circumventing the limitations. The following areas appear to be of chief importance:

(1) Demonstration of the durability and dependability of plastics in building.

(2) Development of usable realistic standards of performance.

(3) Development of construction systems incorporating plastics into buildings in a practicable way.

(4) Making the products readily available to the building industry.

(5) Solving the problem of regulations including building codes.

(6) Educating architects, engineers, and builders in the properties and uses of plastics and, conversely, the plastics industry in the peculiarities and requirements of the building industry.

There is no need to go into detail to point out the potential offered by the building industry. The present volume of all construction is approximately 50 billion dollars per year, of which housing constitutes some 20 billion dollars. It is anticipated that in the next 20 years this volume may double; certainly during the sixties the increase should be substantial. Various estimates place the share of plastics in building today at approximately one to two per cent at the most. Thus an increase of only one per cent, a most modest amount, would represent a very large gain in the volume of plastics employed.

Today plastics are employed in a variety of ways in building. Flooring based on vinyl chloride has become standard. Plastics have produced new and improved coatings. Electrical uses including insulation are common. Waterproof adhesives are widely used, especially in exterior grade plywood. Luminous ceilings and bubble-shaped skylights are common. Wall coverings are widely employed, laminates for furniture and millwork are standard, foams are increasingly used for thermal insulation; the list could be greatly extended.

The foregoing applications are nonstructural. Semi-structural and structural uses are less well developed as are uses in the mechanical equipment of buildings. If a real breakthrough is to be achieved it must include significant parts of the shell and the equipment of the building as well as uses such as those listed above. It is here that both the greatest potential and the greatest problems exist. They include the areas listed above and are briefly examined below.

Durability and dependability

Probably the most asked question respecting plastics in building is, "How long will they last, and how do you know?" or, "Will they last as long as the building is supposed to stand?" or, "Will they last as long as the mortgage?" Questions about lasting qualities or durability are often the most difficult to answer because many plastics are comparatively new and do not have extensive histories stretching back 20 years or more, whereas some traditional building materials like wood and masonry have histories extending over many centuries. A few plastics such as the acrylics and phenolics have exposure histories of more than 20 years, some vinyl chloride and vinylidene chloride compositions have been exposed almost that long, examples of reinforced polyesters go back ten or more years in building, and there are others, but they are the exception rather than the rule.

The plastics industry is faced with a serious problem here. Accelerated laboratory tests are of limited value in predicting long-time behavior. They are particularly useful when correlated with actual long-time exposure tests, but when such long-time tests are lacking there is always some uncertainty concerning the reliability of short-time laboratory tests in predicting long-time behavior. If the building industry is to be convinced that plastics materials are durable and reliable over the periods involved in the life of buildings, the plastics industry must find ways of demonstrating this convincingly. If such assurance is not forthcoming, designers and builders will be slow to use the materials.

When examined more closely, the question of durability takes on new aspects. Why must every part of a building be long lasting? Why would it not often be better to have some parts of a building wear out more quickly than others? Might it not be less expensive and better to use less durable materials and design them so that they can be easily renewed or replaced? It might well be that changing requirements in a building will require alteration in any event, and if parts can readily be removed and replaced greater flexibility in the use of the building will result. For example, if walls and partitions can readily be altered, a building may be much more useful than if these are fixed. If piping, ductwork, wiring and other parts of a building are readily accessible and easily moved about or replaced, changing requirements can more easily be met than if these parts are fixed. The flexibility and light weight of plastics may be assets in design for flexibility of arrangement, alteration, and replacement. If this leads to lessened cost over the useful life of the building in addition to enhanced flexibility in use of the building, plastics may well experience greatly increased use in future years.

Standards

Many standards for plastics materials already exist. The development of such standards has for many years been the major activity of Committee D20, one of the largest and most active groups in the American Society for Testing Materials. These are good standards, but they are materials standards, not product standards. It is true that the industry has brought out product standards, as in the series of commercial standards developed under the sponsorship of the Department of Commerce, but these can only be considered to be a promising beginning. Many are limited in scope and may, for example, only establish dimensions while leaving the whole vital areas of quality control and quality limitations unanswered.

The building industry is going to have to have product standards, or it is not likely to go whole-heartedly for plastics products. An example is the dilemma of the Federal Housing Administration. This agency is under continual pressure to approve plastics products but for the great majority of uses cannot find industry-wide, accepted standards upon which to base an intelligent decision. The same situation confronts architects and engineers when they write specifica-

tions; standards for plastics products are largely non-existent.

Standards do not develop overnight. They require extensive testing and evaluation conducted both by industry and by impartial testing groups from which the limits to be written into standards are evolved. The efforts already being exerted in this direction by various groups in the industry should be greatly expanded and accelerated so that comprehensive sets of reliable standards may be available to the building industry. This may require some alteration of the traditional roles of standards-writing groups such as the A.S.T.M., but the task must be vigorously undertaken.

Systems of construction

For ready adoption in building, it may not be sufficient just to develop a product and then leave it to the architect, engineer, or builder to find ways of incorporating it into the building. A system by which the product may readily be integrated with the rest of the building may be necessary. A sandwich building panel may be a case in point. This may be a fine unit in itself, carefully engineered and of great aesthetic value, but if some practicable system of attachment to the building frame is not provided, the panel may not be used. Furthermore, ways of incorporating windows, doors, flashing, sealants, and of providing for expansion and contraction with changes in temperature outdoors and indoors must be provided.

Piping is another case. Evidently not only pipe but all fittings including valves, elbows, tees, supports, and, most important, methods of connection to nonplastic fixtures must be provided together with methods of installation.

Availability

The best designed and engineered product will not be used unless it is made readily available at the point of use. Considering the vast and diffuse nature of the building industry, this means today that thousands of outlets throughout the country must be supplied with the product and the channels of distribution to these outlets kept filled. It also means that contact must be maintained with the designers—architects, engineers, builders—who determine in the first place whether the product will be specified. This obviously calls for a major effort on the part of any manufacturer or distributor of plastics products.

The picture is shifting in some respects, especially in housing. The great majority of all homes are built today by development or tract builders who erect sizable numbers of houses per year. The proportion of all houses produced by prefabricators, while still quite modest, is also growing. Consequently, sizable quantities of products can be sold through relatively few builders. Nevertheless, the general picture of marketing to a very large number of users scattered throughout the country is still true and will be for some time to come, certainly through a major part of the sixties.

Regulations

Of all the forms of regulation and legal restrictions applying to construction, building codes are at once the most obvious and most important. Unless building codes provide for the incorporation of plastics in building, their use will be severely restricted. This is so well recognized that there is a tendency to think that if the code problem is solved all other problems will automatically take care of themselves. The reverse is more nearly accurate. If it can be demonstrated that plastics are reliable materials and if comprehensive standards backed by adequate test and investigation are provided, and if it can be shown that plastics do not constitute a hazard in construction, the building code problem will be largely solved.

Most code authorities are not adverse to approving new materials and products if it can be proven that they are safe and reliable. Too often the manufacturers of new products demand approval on the basis of inadequate evidence and are incensed when it is denied.

It should be kept in mind that codes are designed to promote safety in buildings and that safety usually entails two principal aspects: safety against structural failure; and safety against fire.

Durability is not necessarily a factor except as lack of it promotes hazardous conditions. Aesthetics plays no legal part, although non-compliance with codes is often seized upon as a pretext to prevent construction to which the real objection is aesthetic.

The question may properly be raised at times, "What is to be saved, the building or the occupants?" Sometimes it appears that a design is more concerned with the building than with the people in it. Frequently, rapid egress is more important than the materials of construction. Contents may easily constitute more of a hazard than the structure. Fire itself may be less important than toxic fumes, smoke, and oxygen depletion. Will a given use of plastics contribute to such hazards or not?

Nevertheless, it is still true that even if all questions respecting safety can satisfactorily be answered, a monumental task remains in obtaining approval for new products and new materials in all the multitudinous jurisdictions throughout the country. We do not have uniform codes applicable automatically throughout large regions such as states. The problem can be simplified somewhat, however, by pressing for adoption of such suggested uniform codes as those of the Building Officials Conference of America, the various regional code associations, the National Board of Fire Underwriters and the recommended New York State Code. Adoption by such organizations and by key cities throughout the country can expedite adoption elsewhere. The important thing is to have the facts that demonstrate the safety of the product.

Education

A large-scale mutual education effort is needed to familiarize the building industry with the properties, peculiarities, nature, promise, and limitations of plastics and, conversely, to introduce the building industry and its requirements to the plastics industry. This educational effort is already underway and is probably most advanced among the major plastics materials manufacturers, practically all of whom are working in this field. It is less well advanced among plastics fabricators and still less developed among the units of the building industry, although here again, many of the leading architects, engineers, and builders are beginning to acquaint themselves with plastics.

A sustained effort is called for, however, if a real mutual understanding between these two industries is to develop and from it the necessary familiarity with plastics that will lead to widespread adoption.

Trends

A review of the major trends now evident in building may help to visualize the areas where greatest opportunities for plastics may lie. As is always true, totally unforeseen developments may change this picture but certain trends appear to be clear.

Shop fabrication: Because field conditions are more uncertain than those in a shop, field labor costs are higher than shop, and the time during which a building site is tied up by construction is unproductive and expensive, there is a major trend in all segments of building toward shop fabrication of largely or completely finished units intended to be rapidly and economically assembled on the site. This approach applies to all aspects of construction from the dwelling house to the skyscraper and from the shell of the building to the equipment and appliances. In many ways this trend is advantageous to plastics because these materials by their nature lend themselves better to shop than to field fabrication. This trend should be kept in mind when evaluating the building potential of the sixties for plastics.

Equipment: Over the years the portion of the total building dollar absorbed by equipment—mechanical, electrical, sanitary—has steadily increased and the trend shows no sign of reversing. For some buildings this already absorbs more than 50 per cent of the total cost and in all buildings the ratio is substantial. Evidently, if plastics are to make a major breakthrough in building this important aspect cannot be neglected. It includes everything—piping, ductwork, hardware, radiant heating, electrical insulation, fixtures, housings and others too numerous to mention.

Flexibility: This term means both design of the building for quick and easy rearrangement of space and occupancy, and construction to allow the building to be disassembled and its parts put together in new arrangements. This calls for large clear spaces unobstructed by immovable elements such as columns and bearing walls. Readily moved partitions and wall panels are another aspect. Lightness and resistance to damage are necessary. Utilities must be available anywhere and everywhere.

An unwelcome corollary of the trend toward rigid lightweight frames with lightweight movable space dividers and continuous plenum spaces over hung ceilings, many luminous, has been the problem of noise control. Older massive construction provided good sound barriers; the new lightweight construction does not. Acoustical control is a real problem, and it may be that plastics, many possessing generally better damping capacity than materials like metals, may be able to help to solve this problem. The challenge and opportunity are there.

In a brief paper such as this, it is impossible to examine in detail the many possible opportunities that may exist for plastics in building during the next ten years. One example can be used to illustrate how the foregoing points may all bear upon the chances for success of a plastics product—foam.

Plastics foams are being actively de-

(Continued on page 6)

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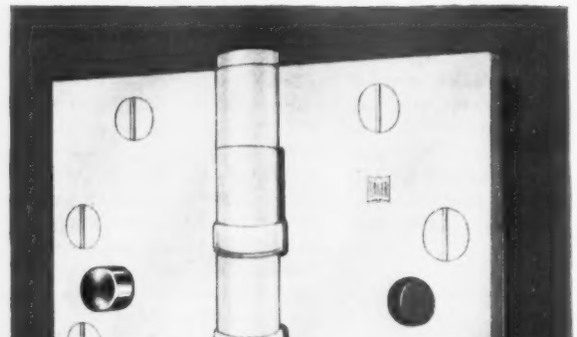

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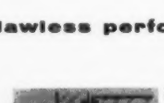

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FORECAST

(Continued from page 5)

veloped by a number of segments of the plastics industry. They have many promising attributes, among them lightness, good thermal insulation, ability to be made and fabricated in a number of different forms, and many have good enough strength properties to make satisfactory cores for structural sandwiches to be used as curtains or as loadbearing members, on the exteriors of buildings or as interior partitions and space dividers. There is marked interest in these foams on the part of the building industry, and the potential is great. A number of questions must be answered satisfactorily:

(1) How do we know that these foams will last for the life of the sandwich? Will they still be there 5, 10, 20 years from now? Will they deteriorate in any way? Will they remain stable dimensionally? Will there be any loss of strength?

(2) What standards have been drawn up by reliable impartial agencies? If such standards do not exist, how soon will they be established?

(3) What systems for incorporating these panels into buildings have been developed? How do they fit with the other elements of the building?

(4) How are the foam core sandwiches going to be made available to the building industry? Will local dealers sell them, will plastics manufacturers establish their own outlets, or will the raw materials go to building materials manufacturers who in turn will make the panels?

(5) What about building codes? Can the fire and structural safety of these panels be established? Because these panels depend on the combined action of core and facings and many codes do not recognize such construction, how is their adoption to be effected?

(6) How are designers and builders to be acquainted with the principles of sandwich design and construction so that they will feel confident and free to use them?

Judiciously designed foam-core sandwich panels conforming to some system of construction components can go a long way toward providing shop-fabricated, easily erected construction embodying a great deal of flexibility in the finished building. *If at the same time they can compete in in-place cost with other materials, many firmly entrenched, the future is indeed bright.* But, these questions must be answered if the large-scale potential is to be realized.

The example of the foam-core sandwich panel can be repeated and multiplied in all the other aspects of building. The potential is there, the interest is there; if the questions can be satisfactorily answered, the breakthrough is also undoubtedly there.

COMMUNICATIONS

A/E NEWS welcomes the opinions of its readers. Letters should be addressed to: Editor, Architectural and Engineering News 452 Fifth Ave., N. Y. 18.

Editor:

A number of architect friends have called my attention to the article on acoustics in your April 1960 issue. . . . The original printing of this article in the Building Research Institute proceedings was based on a transcript of a tape recording made of an informal talk which I gave at the BRI meeting with the benefit of hand-waving and a blackboard. I wish it were always possible when such a transcript is printed in a magazine to entitle it *informal presentation* instead of *paper*. . . .

I do want to point out a correction which should be made in connection with the remarks about luminous ceilings under the section "Case History/Executive Distraction." I state that, "Now, there is nothing wrong with luminous ceilings, except they are designed to control light and have nothing to do with the sound aspects of the problem." What I believe I said was, "sound *transmission* aspects of the problem," and I was talking at this point about lightweight materials similar to the plastics usually used for luminous ceilings. These plastic materials are never heavy enough by themselves to have any value as sound barriers.

Later in the article I talk about sound absorption mechanisms and, here, discuss the need for the proper "flow resistance" through a material to permit it to have the proper sound absorbing characteristics. I then point out that there are no miracles, and that there have been some fallacious claims for *thin* materials which can absorb sound quite wonderfully. I was referring here to materials cemented to wall and ceiling surfaces. Actually, there have been developed thin materials, especially for use in luminous ceilings which *do* have the proper flow resistance in a very thin sheet. These materials, to absorb sound, must be spaced some distance away from the backup ceiling construction and, when properly used, do give excellent sound absorption. This type of material, however, will not give significant sound absorption if cemented directly to a hard surface.

I hope the article serves the useful purpose of teaching some of the basic principles of acoustics to architects and engineers—I only hope no one thinks I would *write* quite so informally.

Sincerely,
Robert B. Newman
Bolt, Beranek and Newman, Inc.
Cambridge, Mass.

Editor:

I have read with much enthusiasm your new magazine and want to congratulate you on the manner in which you are presenting to the industry information which is really worthwhile, and full of sound ideas.

In Volume II, No. 4, you published an article entitled "Acoustic Basic Concepts of Engineering Design," by Robert Newman. . . . This article, I think, is the finest article on acoustics, written in a manner which can be understood by a layman, that I have ever read. . . .

Yours very truly,
Raymond A. Bowers, AIA
Fulmer & Bowers, Architects
Princeton, N. J.

Editor:

Your recent issue featuring modular drawing, with reference to the dot, arrow and grid, was very enlightening and we are most interested in learning more about the subject.

This is a relatively new firm and we have an opportunity to conveniently develop the modular system in our office, but need to know more about the operations and details of it.

If you have prepared literature and samples available on modular drawing it would be most helpful; however, we would appreciate any further information which can be provided on the subject.

Very truly yours,
Stephen W. Kent
Kent and Henry,
Architects and Engineers
El Paso, Texas

Editor's note: *Information concerning modular standards should be addressed to Byron C. Bloomfield, AIA, Executive Director, Modular Building Standards Assn., 2029 K Street, N.W., Washington 6, D.C.*

Editor:

Your synopsis of the research study by the School of Architecture at Pratt Institute, Brooklyn, N. Y., and entitled "Methods of Reducing the Cost of Public Housing" in your April issue, has been reviewed with interest by this office.

Will you please indicate to us the manner by which we may obtain a copy of the published report.

Very truly yours,
C. Morrison Stephens
Sutton and Stephens, Architects
San Francisco, Calif.

Editor's note: *We are informed by Dean Grossi of Pratt Institute, that requests for copies or inquiries should be directed to: Plastics Merchandising Div., Dow Chemical Corp., Midland, Mich.*

Editor:

Often the question is asked, what is a Consulting Engineer and what does he do? For many years there was wide confusion concerning the definition of who, why and what applied to the general term, "Consulting Engineer." The answer to this question should be, that he is an experienced registered engineer applying his technical and practical knowledge to his client's interest. This profession can be compared to the Architectural, Medical and Legal professions. The Consulting Engineer is a man with high standards of professional and ethical performance with no commercial affiliations that might tend to bias his opinion or conflict with his independent practice. . . .

Good engineering will save many times its costs through sound thought and proper design which in turn leads to more economical construction. Therefore, all designs, drawings, specifications or reports involving engineering judgement and discretion should bear the seals of a registered engineer. This is for the public's protection as his services are directed to obtain satisfactory results. These cover important engineering problems such as structural construction, boiler plants, heating, ventilating, air conditioning, electrical, water supply, plumbing and sewage disposal, to name some of the specialized fields of the Consulting Engineer.

Floyd H. Valentine,
Secretary
Cleveland Consulting Engineers Assn.
Cleveland 14, Ohio

Editor:

One first, and long-delayed purpose—long-delayed with reference to my shortcomings when it comes to sitting down and writing any sort of a letter—is to compliment your entire staff for each and every issue that I have been fortunate to have received in the past year or more. In each issue, I can honestly say, that the arrangement of the publication, the contents including the pertinent information therein, and the service you offer to your readers all add up to a superlative arrangement for the reader. The articles, in addition to being timely, are short, concise, and to the point without frills—just complete enough for a hurried person to keep pace with the world or sphere of his employment and his occupation. In conclusion, all I can add to the above is that I hope that your policy continues 'as is' for years to come—I don't think that you'll regret it. . . .

Very truly yours,
Robert J. Hoffman, PE
Consulting Engineer
Plainfield, New Jersey

Editor:

This is to acknowledge receipt of . . . the back issues of your publication. We are pleased to know that you have added our name to your mailing list . . . and your publication will be put to good use by our patrons. We send our grateful appreciation for your generosity and most valuable cooperation in helping us to meet the research needs of our patrons.

Sincerely yours,
Ann Bauman (Mrs.)
Gifts and Exchange Librarian
The John Crerar Library
Chicago 1, Ill.

Editor:

May we congratulate you on the April 1960 issue, Volume II, Number 4, of Architectural & Engineering News. It is one of the most informative and worthwhile architectural publications which we receive. . . .

Very truly yours,
J. R. Pelikan
Lewis C. Bowers and Sons, Inc.
Princeton, N. J.

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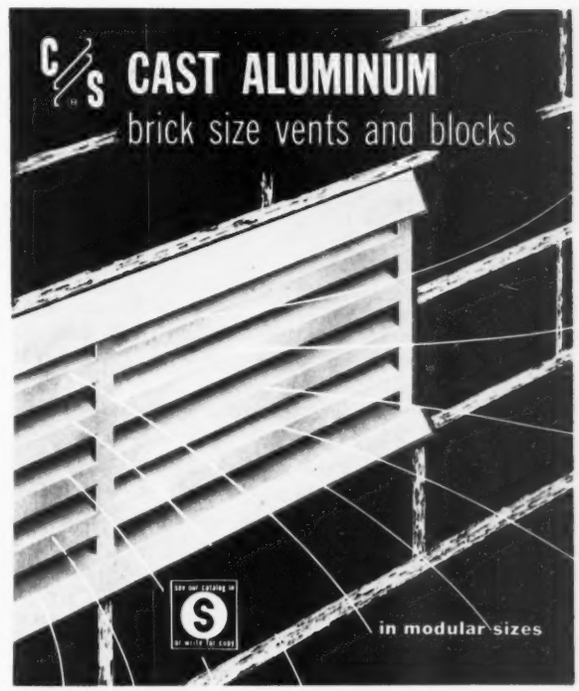

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A|E NEWS

Recently opened exhibit of the "New Look in Federal Architecture" at the Museum of Science and Industry in Chicago sponsored by the Chicago Chapter of The American Institute of Architects. Among prominent figures at opening were, left to right: L. L. Hunter, Assistant Commissioner for Design and Construction, General Services Administration; William J. Bachman, FAIA, President, Chicago Chapter, AIA; Wilmont Vickrey, AIA, Chairman Exhibition Committee, Ludwig Mies Van der Rohe, FAIA, AIA's 1960 Gold Medalist; Ira Bach, Commissioner, Department of City Planning of Chicago.

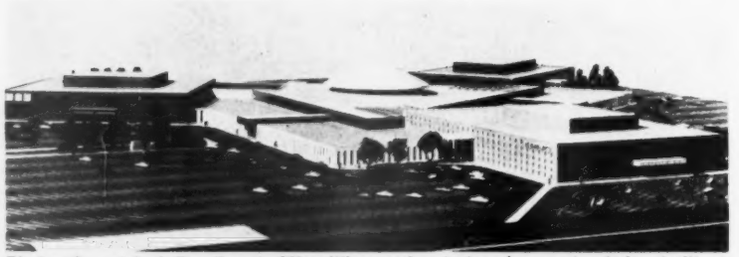
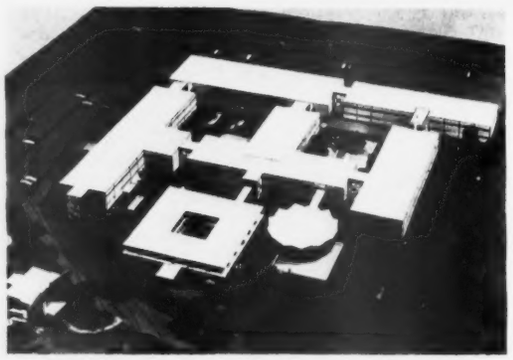
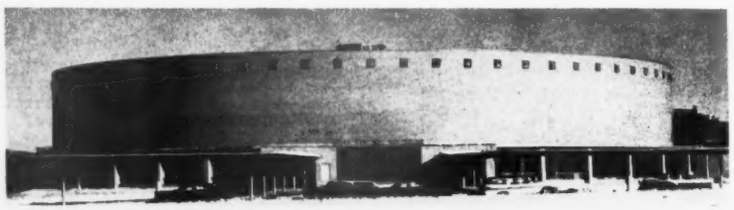


Photo of model of Randhurst, $23 million regional shopping center being built at Mt. Prospect, Ill. Scheduled for 1962 completion, project contains three major department stores in addition to 130 shops. Architects: Victor Gruen Associates.



(ABOVE) Construction recently began on Stage 1 of a multi-million dollar, seven unit complex of building to house the Information Technology Center of Itek Corporation at Lexington, Mass. The 46-acre site will include a T-shaped office and research building and a main laboratory building. Architects: Fulmer and Bowers, Princeton, N. J. (BELOW) View of recently completed $4 million Utica Memorial Auditorium, Utica, N. Y. Multi-purpose, circular arena features unique pre-stressed dual cable roof system, 240 feet in diameter, to eliminate the flutter usually associated with cable construction. Architect: Gehron & Seltzer, New York, N. Y., engineer: Dr. Lev Zetlin.



AIA portfolio

The establishment of a national department of urban affairs was urged by Philip Will, Jr., FAIA, president of *The American Institute of Architects.*

Speaking before a luncheon of the Museum of Science and Industry in Chicago marking the opening of a special exhibit illustrating contemporary architecture for the Public Buildings Service of the General Services Administration, Will said that a close partnership is necessary between the government and the architectural profession.

"At the present time 65 per cent of the population is concentrated in metropolitan areas," he pointed out. "In ten years this will be 75 per cent and in 30 years, 85 per cent of the population will be in metropolitan areas. These figures take on even more dramatic meaning when we realize that by 1999—just a 40-year mortgage away—the population of the United States will be doubled."

"We are becoming an overwhelmingly urbanized nation, but do we know what kind of cities we wish to create and why? Are our ideals and objectives equal to our capacity to build the environment which will of itself shape the nature of our citizenry? This problem is so great and of such importance according to Will, that it will be one of the major issues in the coming presidential campaign. He pointed out that more money is currently being spent on fish breeding and wildlife sanctuaries than on conserving human beings through slum clearance.

"The predicted figure of ⅔ trillion dollars for construction in the 1960's makes it obvious that the problem cannot be solved by any one group, however practical or however visionary," Will asserted. "This is a challenge which must be shared by government officials and architects."

A city planner, an architectural critic, a writer, and a publisher were honored recently at the annual meeting of the *New York Chapter of The American Institute of Architects.*

James Felt, Chairman of the City Planning Commission of New York, was given the Chapter's Award of Merit "in recognition of your integrity and dedication as a public servant with the most laudable ambition to create a new zoning ordinance for the City of New York." Mr. Felt was named an Honorary Associate of the New York Chapter in 1958.

The architectural critic, Lewis Mumford, was made an Honorary Associate member of the Chapter at the meeting. "This membership is being bestowed upon Mr. Mumford for his articles on architectural criticism which have contributed importantly to a greater aesthetic appreciation of architecture by the reading public. Mr. Mumford contributes articles to the *New Yorker* magazine.

On behalf of the AIA's Annual Architectural Journalism Competition Jury, the New York Chapter also awarded Certificates of Merit to *Time* Magazine, *The Nation* and *Horizon*

(Continued on page 9)

Circle 106 for further information about DARLINGTON BRICK pp 10-11→

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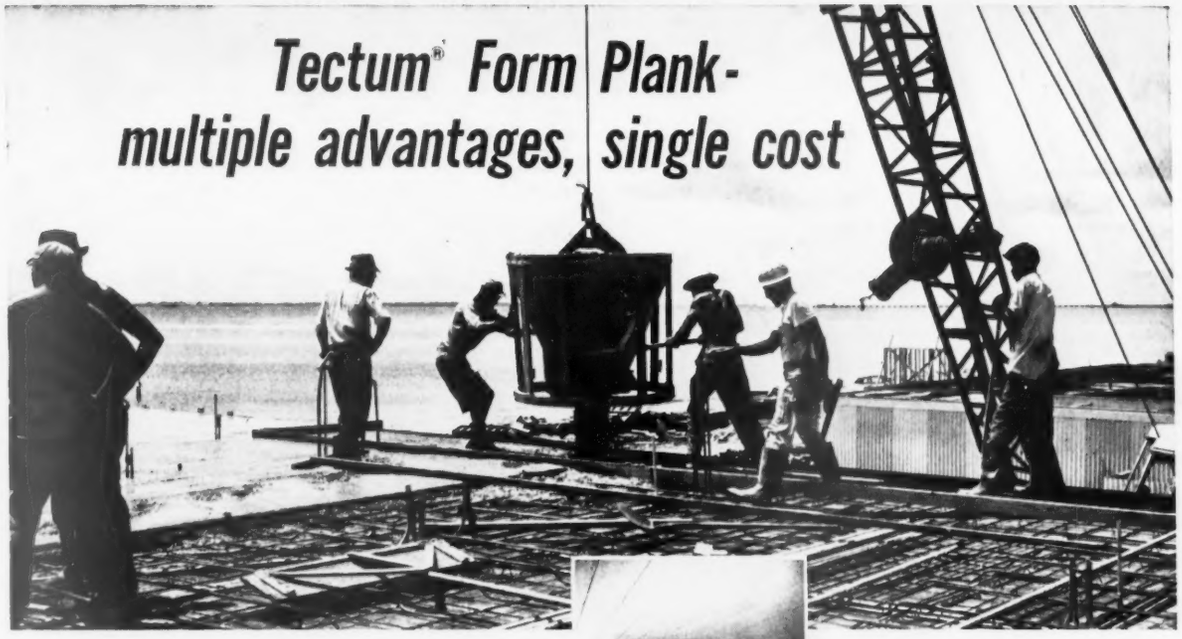

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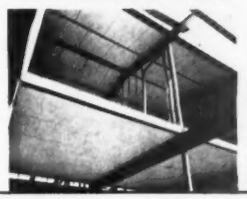
Bow string trusses were used to form barrel ceiling slab for each of 9 bays in this bowling alley. Savings included reuse of trusses for each bay. Tectum soaks up sound, provides insulation, conforms readily to curved shapes. Beautiful textured form plank has decorative advantages. **Architects:** Ryan & Roark, Tulsa. **Contractor:** Industrial Concrete Builders, Oklahoma City.

19,000 sq. ft. of 1" Tectum formed the tent-like hyperbolic paraboloid in this new fieldhouse. Tectum, ideal acoustical material for structural open construction roof structures, serves as form plank then remains in place as acoustical ceiling for this wide span structure. **Architect:** R. Duane Conner, A.I.A. **Contractor:** Fredrickson Construction Co.



Two uses for versatile Tectum are shown in the Reed College Men's Dormitory. Roof deck is Tectum tile; ceiling of the first floor is Tectum Form Plank. **Architects,** Shell, Hoyt & Farnham. **Contractor:** Juhr & Sons, Portland, Oregon.

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Max. Shoring Joist Spacing	12" or solid	24" 20"	28" 24"	32" 24"
Standard Form Plank Sizes (Covering Area)	30" x 48" thru 120"	22" x 48" thru 120" 30" x 48" thru 120"	22" x 48" thru 120" 30" x 48" thru 120"	22" x 48" thru 120" 30" x 48" thru 120"
Modular Form Plank Size	Not Available	2" x 30" x 96"	Not Available	Not Available
Shipping Dimensions	Same as above	For Standard Form Plank 22¾" or 30¾" by length. For Modular Form Plank, only, 30¾" x 96¾".		
Edge Fabrication	Beveled long edges	For Standard Form Plank — T & G and beveled long edges. For Modular Form Plank — T & G and beveled 4 sides.		
Approximate Weight PSF	2.25	4.25	5.25	6.25
Noise Reduction Coefficients	.50-.60	.60-.70	.65-.75	.75-.85
Clip Nomenclature	FPC-1	FPC-2	FPC-2	FPC-2

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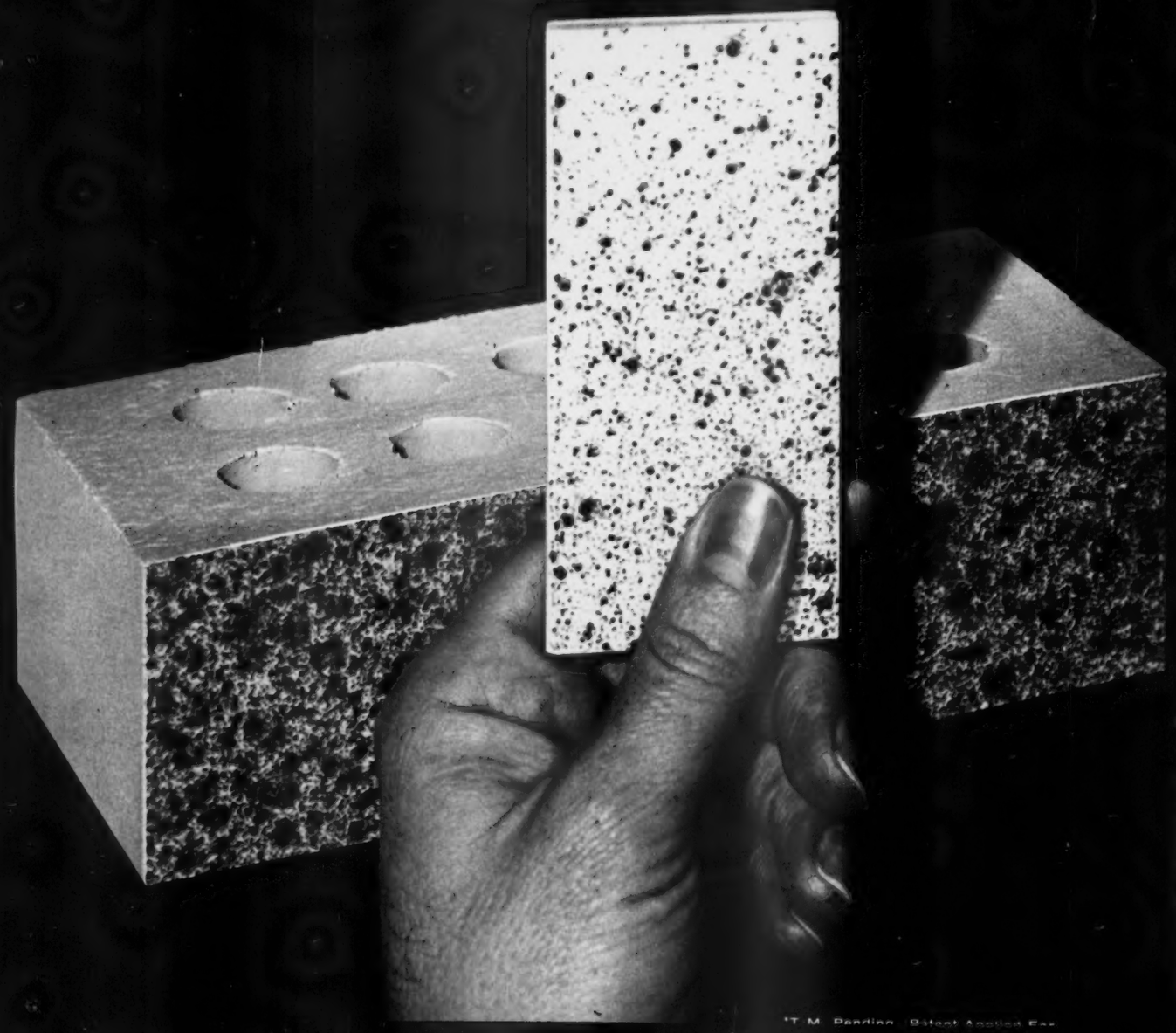

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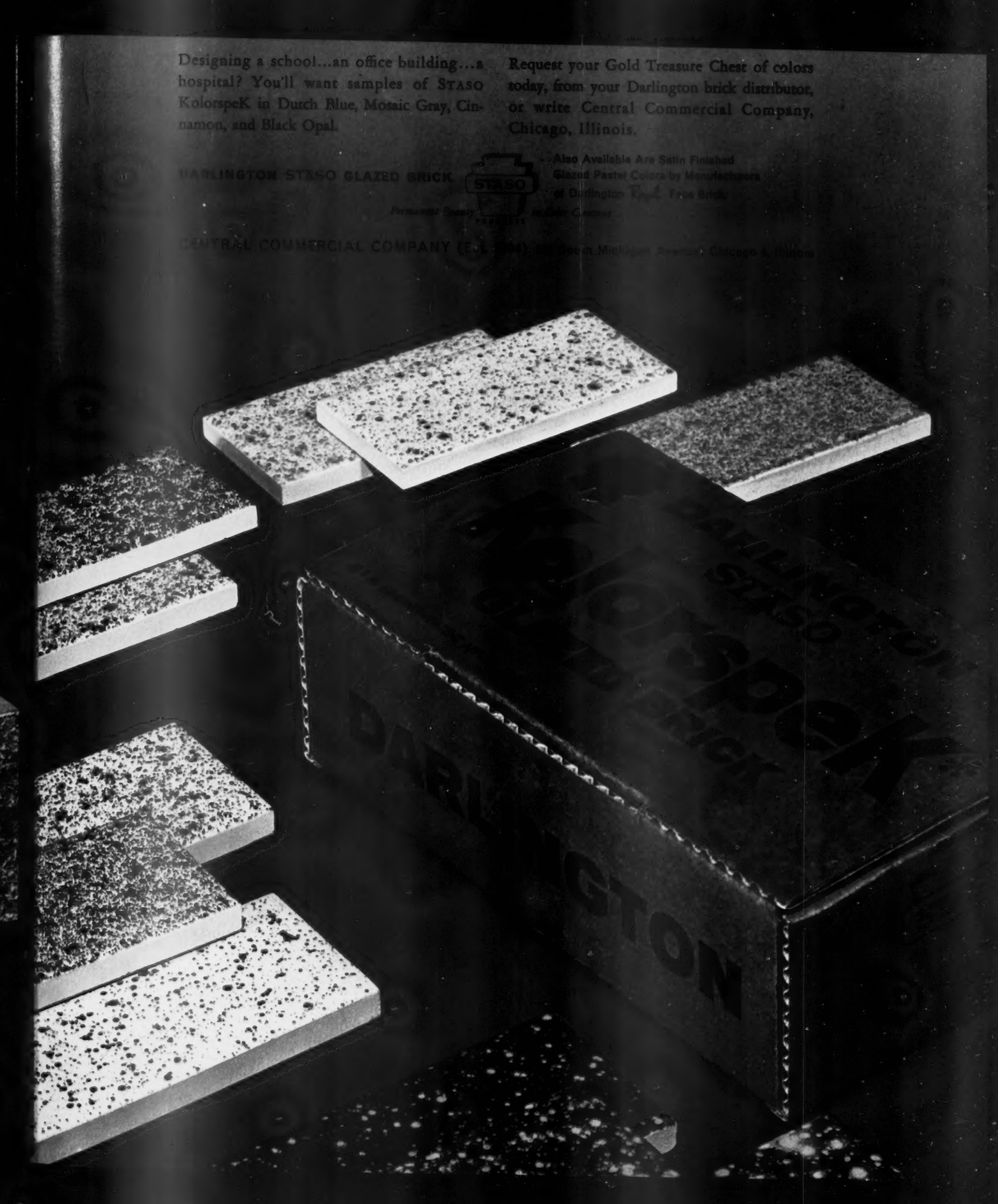

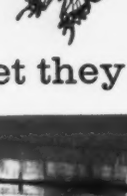

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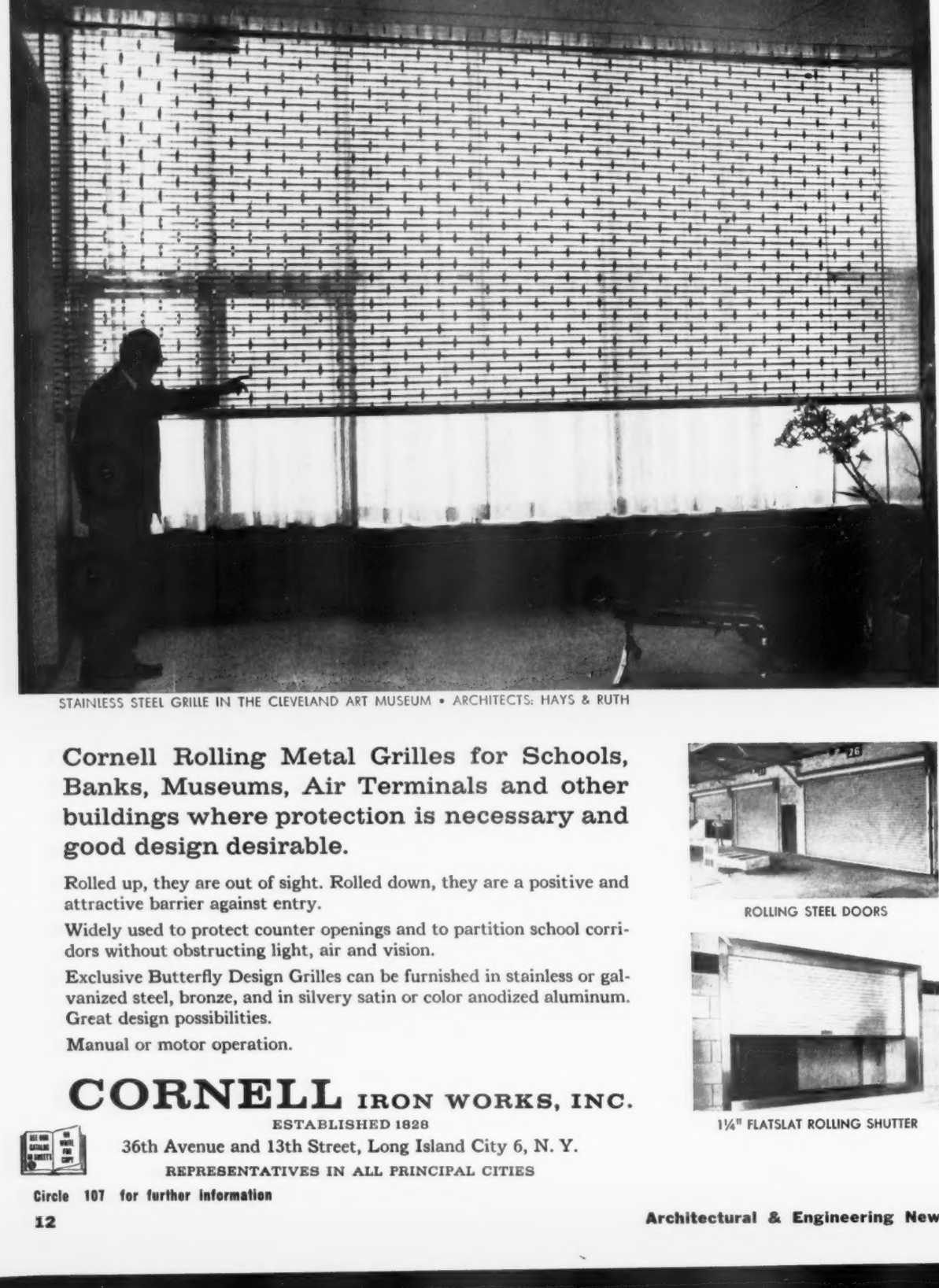

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Magazine. The jury cited *Time* Magazine "for the excellence of a continuing series of articles on architectural subjects." Cranston Jones, writer of the series accepted on behalf of the magazine. George Kirstein, publisher of *The Nation,* received that magazine's award given for "excellence of a series of articles on architecture." The magazine, *Horizon,* was honored for an article on architecture by Grady Clay, real estate editor of the *Louisville Courier.*

The late Bassett Jones, an engineer who developed lighting systems and elevators for skyscrapers, was honored by a special citation from the New York Chapter "in affectionate memory of his distinguished contributions to the technical development of architecture and his stimulating collaboration with its practitioners.

Education

A new school in the College of Fine Arts, offering a Bachelor of Architecture degree, will be inaugurated at Ohio University this fall. Director of the school will be Walter A. Taylor, FAIA, who since 1946 has been director of education and research for The American Institute of Architects, Washington, D. C.

Ohio University president John C. Baker, in announcing plans for the new school of Architecture, said today the degree will require completion of a five-year program. The first Bachelor of Architecture degrees probably will be granted in 1963.

At its January meeting, the Board of Regents of the University of the State of New York granted senior college status to the *New York Institute of Technology,* authorizing baccalaureate programs leading to the Bachelor of Science and the Bachelor of Fine Arts. The Institute, which occupies a 12-story building at 135-145 West 70th Street, New York City, has announced programs which will contribute significantly to American higher education, filling the gap between the craftsman-mechanic type of program and that of the theoretical engineer-scientist.

The sixth annual summer student training program to be held by the New York architectural firm of *Voorhees Walker Smith Smith and Haines* began last month. Eighteen architectural and engineering students from seventeen colleges east of the Mississippi will embark on a ten week course of practical training in one of America's oldest and largest firms. The course, which includes seminars, participation in the everyday work of an architectural office and field visits to building sites, is designed entirely for the benefit of the students as a supplement to their academic studies. Even after six years, the program is still believed to be unique in this country.

Engineering educators from all parts of the United States gathered at the University of Michigan early in July for what has been described as a vital conference on civil engineering education curricula.

Deans and heads of departments of engineering in 138 colleges, universities and institutions with curricula in civil engineering accredited by the Engineers Council for Professional Development have been invited to attend the conference on an expense-paid basis. More than 100 other engineering educators are expected to attend.

The conference is being financed by a grant from the *National Science Foundation.* Last December, *The Cooper Union for the Advancement of Science and Art,* New York, received a grant of $43,410 from NSF to support a projected study of the scope and content of under-graduate curricula in civil engineering.

The project was co-sponsored by the *American Society of Civil Engineers* and the *American Society for Engineering Education.*

Expansion of civil engineering curricula, perhaps with more emphasis on the study of humanities, and an increased period of study before degrees are granted, are among the subjects to be considered at the conference.

The *National Institute for Architectural Education,* 115 East 40th Street, New York 16, N. Y. has announced its new program of awards and competitions in architectural design. Copies of the program are obtainable from the NIAE.

CEC news

The *Consulting Engineers Council,* representing state consulting engineers organizations nationally, has published a 16-page booklet entitled "You and Public Relations," for use by state groups, firms and individual engineers. The booklet is being distributed nationally to consulting engineers by the CEC headquarters in Springfield, Illinois.

Novel SA tour open to architects

A specially prepared, 17-day tour, exclusively for architects, to four countries—Brazil, Peru, Ecuador and

(Continued on page 14)

A|E NEWS

(Continued from page 8)

(LEFT) New York City's First National City Bank Building, bounded by Lexington and Park Avenues and 53rd and 54th Streets in Manhattan, is 1,500,000 sq. ft., 41-story office building, scheduled for occupancy in late 1960. Architects: Carson & Lundin; Kahn & Jacobs. (RIGHT) Night view of $1.4 million health and physical education building at Central Washington College of Education, Ellensburg, Wash., which employs suspension roof design entirely column free on inside. Galvanized bridge cables support roof, except where it is fastened to exterior walls, resulting in a "floating" roof section. Cables are anchored in continuous reinforced "dead man," 420' long and buried 12' deep. Continuous band of fibrous glass reinforced plastic at roof line helps provide effective daylighting and offers interesting effect at night. Architect: Ralph H. Burkhard, AIA, Seattle, Wash.

Completion early in 1961 is scheduled for the new Broadway department store in the Whittwood Shopping Center, east of Whittier, Calif. The 141,600 sq. ft. building will have three selling floors plus a penthouse to accommodate air-conditioning, elevator, and related mechanical equipment functions. Other features include use of interlaced concrete block facia surrounding second and third floors in a horizontal design with Italian marble facing on the first floor exterior. Store unit will occupy 17 acres and provide parking facilities for 5,000 cars. Project designed by Charles Luckman Associates, planning-architecture-engineering firm of Los Angeles.

Circle 106 for further information about
←DARLINGTON BRICK pp 10-11

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A|E NEWS

(Continued from page 13)

Colombia—is jointly announced by A/E News and IVA, the Inter-American Visitors Association. The IVA program is to facilitate the exchange of professional groups between the Americas and to stimulate greater mutual understanding and better economic and cultural inter-American relations. The group, which is limited to only 15 architect-participants (including wives) will visit key cities, attend luncheons, banquets, receptions, seminars and special events given by government officials, business leaders, architectural societies and social clubs. First class (regular carriers) air transportation (to and from NYC), insurance, limousine transfers, gratuities, first class hotel accommodations (double occupancy) with Continental breakfast, special reception plus other features are in the program. Tour will receive wide press, radio and TV coverage. IVA's coordinating efforts makes cost of tour, per person, only $975, representing a 30 per cent saving. Travel arrangements are by established and reputable agencies. Chairman of the group is Mr. David W. MacCurdy, of Voorhees Walker Smith Smith and Haines, New York architectural firm. Tour dates: from August 12 and return August 30, 1960. Inquiries should be addressed to Inter-American Visitors Association, Inc., 15 West 46th St., New York 36, N.Y.

Competitions

Various competitions with their programs are announced by the following associations: *American Council for Trinity College, Dublin, Ireland*, 53 East 93rd Street, New York 28, N. Y.; *Everson Museum of Art of Syracuse*, State and James Streets, Syracuse 3, N. Y. (*Fifth Competition for Ceramic Arts as Applied to Architecture*); and the Architectural Exhibition of Hospitals sponsored by the *American Hospital Association* in cooperation with the AIA: write to Roger C. Mellem, AIA, *American Hospital Association*, 840 North Lake Shore Drive, Chicago 11, Ill.; The *Eighth Annual Industrial and Institutional Landscaping Awards Competition* is announced by the American Association of Nurserymen. Information may be had from Dr. Richard P. White, *American Association of Nurserymen*, 635 Southern Building, Washington 5, D. C.

← Circle 108 for further information

a better lid

by Leon E. Trachtman*

Frank Lloyd Wright has somewhere said that the caveman's most difficult construction job was making the lid to his house. In this respect we are no different from the caveman; the making of lids—or roofs—has continued to be particularly troublesome to builders through history and into our own time.

The first roofs constructed by men were probably simply broad leaves and palms placed over propped branches. It is a step—a long step to be sure, but still a step—to the basic post and lintel system of construction. This fundamental and universal system is simply the support by two uprights—post or pillars—of a cross beam or lintel which spans the distance between them. Since the span between two uprights is limited absolutely by the length of the available cross beam, early stone building cultures found themselves in difficulty.

Stone beams and lintels of great span are not easily procurable, and once procured, are not easily maneuvered or manipulated. As a result, a number of relatively short lintels had to be supported with a multitude of uprights, and the result was the many-columned Egyptian and Greek structure. Subsequent cultures, building with other materials like brick and timber, managed to support longer beams with fewer uprights and ultimately learned to build roofs in the shape of the vault or dome. Whatever the style of building, however, support of the roof has always been a most significant problem. Straightforward upright and beam construction, requires massive support for the downward thrust. Arches and domes develop side thrust as well, and so with them comes the problem of building with extremely thick walls or with buttresses to strengthen wall at points where side thrust from vaulted or arched roof is greatest.

The possible range of building techniques in primitive cultures is limited by the particular materials present in the immediate area. The modern builder, while still limited in this way to a degree, has at his disposal a far greater number of natural and synthetic materials. Through the use of this wider range of materials, he can be much freer in his approach to some of the basic architectural problems which have faced all men who build.

The relationship between building materials and new concepts in construction is, of course, a reciprocal one. There are times when a new architectural concept or need will elicit from our contemporary technology new materials with which the concept may be realized or the need fulfilled. Conversely, the appearance of a new building material may often stimulate the creative processes in our builders and prompt them to adapt their thinking so as to take full advantage of the qualities of this particular material. Both processes have been at work in Purdue University's School of Civil Engineering, where a fresh approach to lid-building has been devised.

For a number of years, there has been great interest on the part of architects and structural engineers in thin-shell construction of roofs covering large, arena-type buildings. Any technique of construction which offers a continuous membrane-like cover unobstructed by traditionally necessary but problem producing girders, trusses, columns and other structural supports, is bound to have wide use and acceptance. Most membrane-type roofs of this sort have been made of reinforced concrete no less than half an inch thick and in many cases going up to thick-shell proportions. The one serious deterrent to construction of reinforced concrete roofs of this thickness for arena-type buildings has been the cost. The curved forms for these roofs require an immense amount of supporting falsework during the concrete curing period. Therefore, while the results of this sort of construction are usually extremely pleasing architecturally and aesthetically, the high cost of construction has led many builders to ignore their rich possibilities.

As one way of solving this problem, a new material used in a new way has opened the door to relatively inexpensive construction of membrane-type thin-shell roof structures. The material is a foamed polystyrene, *Styrofoam*, a trade-marked product of the Dow Chemical Company. The research group undertaking this investigation of the expanded polystyrene is composed of members of the Structural Engineering Department of the School of Civil Engineering at Purdue University, who have been working under a grant from the Plastics Technical Service of the Dow Chemical Company. Members of this group are Joseph L. Waling, Professor of Structural Engineering; Longin B. Greszczuk, now Associate Engineer, Douglas Aircraft Company, Inc., and formerly graduate assistant in Structural Engineering; Hossein Bahiman, Assistant Professor; Melton M. Miller, instructor, and Messrs. James T. Wang and James E. Carpenter, graduate students in the Department of Civil Engineering.

The shape that the group has been principally working with is the hyperbolic paraboloid. This research into the use of plastics in thin-shell structures has consisted of three parts: study of the fundamental properties of the expanded polystyrene *(Styrofoam)* alone and in combination with other materials; research relating to the effects of the mechanical properties of this expanded polystyrene as temporary structural material on thin shell theories, aimed at developing procedures for using this product as a structural material; and finally the construction of thin-shell models to test the theoretical studies of the properties of the foamed plastic and to explore the characteristics of the forms in which it is used.

The hyperbolic paraboloid (*figure 1.*) is a fascinating shape, made more fascinating by the fact that

(Continued on page 16)

**Mr. Trachtman is a science writer and editor for Purdue Research Foundation of Purdue University and he also serves as Administrator of the Foundation's Research Contracts Office. The article is reprinted from Volume 6, Number 9 of Purdue Research Foundation's "Horizon."*

(Continued from page 15)

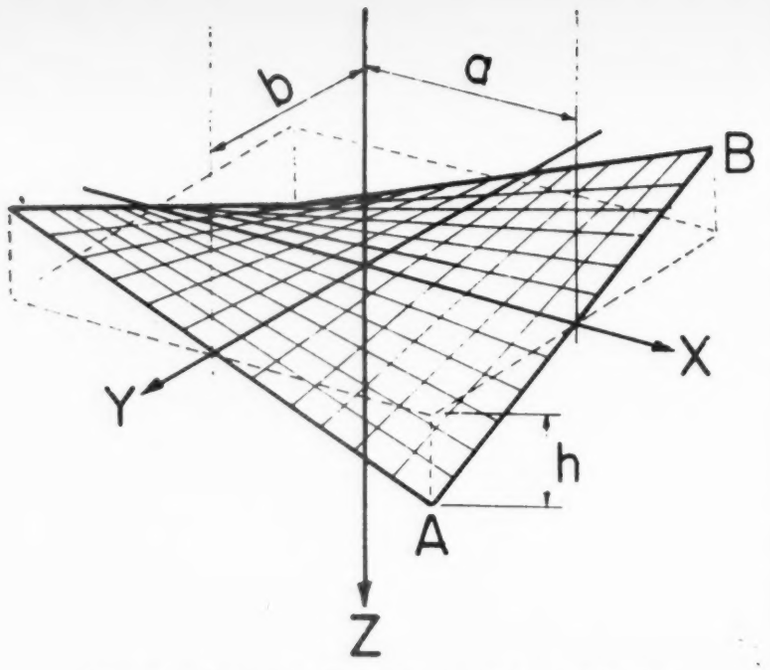


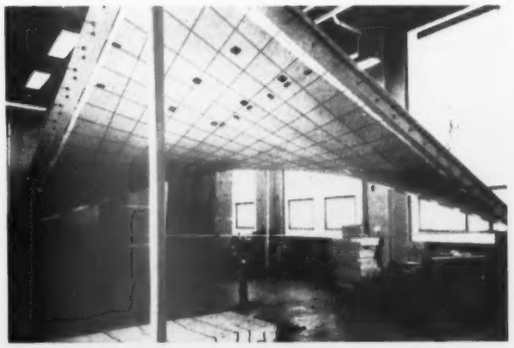
Figure 1. A diagram of a hyperbolic paraboloid form. Notice that the curved surface of the paraboloid is generated by a series of crossed straight lines.

a better lid

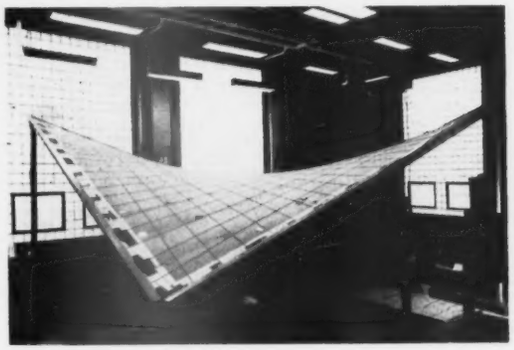
The Transworld Airlines Terminal at New York's Idlewild International Airport, designed by Architect Eero Saarinen, FAIA, consists of a main building, and two concourses extending out to the loading areas. The elliptically-shaped, elevated concourses are designed to be built from steel reinforced concrete over low-cost, permanent form boards of insulating plastic foam.

the curved and graceful surface of the form is generated by a series of straight lines. Using a square framed paraboloid, the Purdue group explored many possibilities of exploiting the airy and graceful but essentially simple geometric shape. The work started with theoretical studies of the shape, proceeded through construction of space models and table-size construction models, and culminated in the building of a large-scale laboratory model.

The first problem faced by the research group was to decide how to support the foamed plastic shell which was to cover the paraboloid. A double lattice of wires, one above and one below the material was devised. At first, consideration was given to stringing the wires straight across the paraboloid. The excessively high wire tension which would have been necessary to work the foamed polystyrene into perfect hyperbolic paraboloid shape rule out this approach. A simpler solution to the problem led from one edge beam to the opposite one. It was concluded that if the wires were offset three places (about 36 inchs), a snug and satisfactory warping and alignment of the foamed plastic would take place. By offsetting the lattice of wires above the plastic in one direction and the lattice below the plastic in the other, a system of opposing forces was set up between the two lattices. The top wires were skewed so as to exert downward force and the bottom lattice was skewed so as to exert upward force. In this way, the expanded plastic was forced into the true shape.



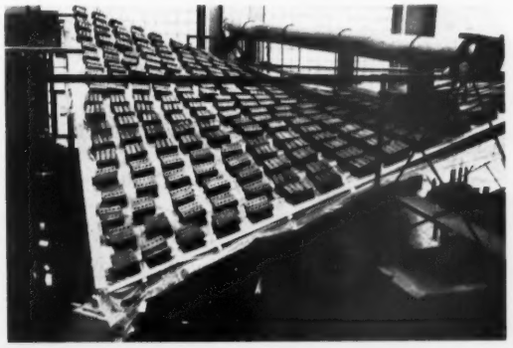
Above: Figure 2. Underside of the hyperbolic paraboloid from the high corner. Below: Figure 3. View of the laboratory model from the low corner.



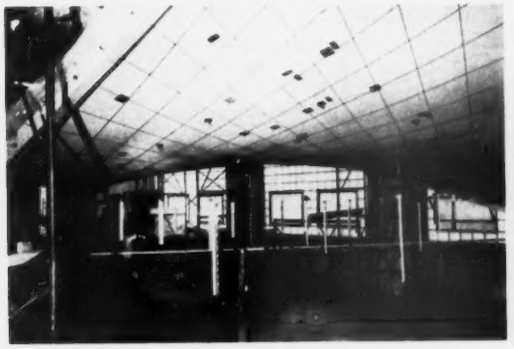
The large laboratory model was a square, 20 feet by 20 feet, with a rise of seven feet from the low corners to the high corners. The low corners were place on abutments four feet above the laboratory floor (*figure 3.*). Holes for supporting the lattice of wires were spaced 12 inches apart on the steel edge beams of the model. Between the two offset wire lattices was placed a layer of the plastic material which, as planned, was warped into perfect hyperbolic paraboloid shape by the stabilizing action of the tightened wires. The plastic shell was then available as a framework on which a thin shell of concrete could be laid. After the concrete curing period, the expanded polystyrene remains bonded to its inner surface and serves both as insulator and as a vapor barrier, and can also be used as the base for interior plastering.

The expanded plastic planks used in the model were each three inches by 24 inches by eight feet. To make sure that these planks fit truly and tightly, a system of high-density polystyrene wedges were used around the edges of the shell, inside the edge beams. The planks were further aligned to each other by sheet metal H- and Z-clips. When the wire lattices and the high density wedges were finally tightened, the straight plastic planks were conformed into a highly accurate hyperbolic shape. As a matter of fact, the maximum deviation of the constructed surface from a true geometric hyperbolic paraboloid was found to be no more than one-half an inch.

Following construction of the shell, experimental loading was performed in planned sequence. The loading was accomplished by using regular 4.8 pound bricks as loading material. Four successive loading tests used loads of 4.8, 9.6, 14.4, and 19.2 pounds per square foot. The downward deflection of the foamed polystyrene shell at its center point (maximum deflection) was less than three inches at a loading of



Above: Figure 4. Top view of the large-scale laboratory model under dead weight load of 19.2 lbs./sf. Below: Figure 5. View from beneath.

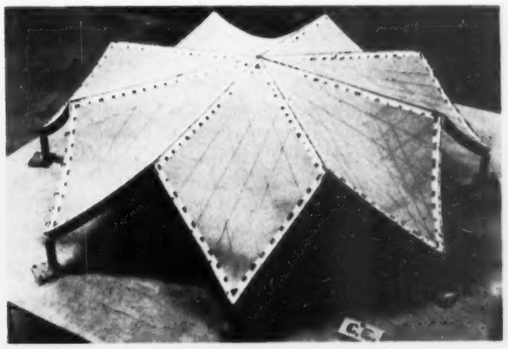


19.2 pounds per square foot. This loading was estimated to be greater than the weight of one and one-half inch concrete shell if it were placed uniformly over the entire surface of the plastic material, or a two-inch shell made of concrete with lightweight aggregates.

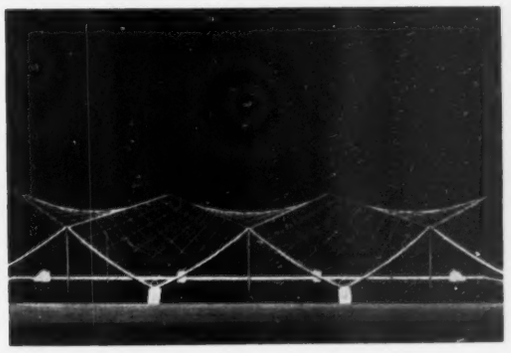
To test the possibility of reducing this deflection, an attempt was made to stiffen the foamed plastic by troweling onto it a thin skin of mortar consisting of one part high early strength cement and three parts sand. This material had an average thickness of something under a quarter of an inch. Tests revealed that this stiffening did indeed reduce the deflection of the shell. Average deflections were about one-sixth as great for the loaded stiffened shell as for the plain Styrofoam shell. For example, at the center point, where the plain shell deflection under a load of 19.2 pounds per square foot was found to be 2.7 inches, for the stiffened shell it was found to be less than half an inch.

Results of all tests performed on the experimental model indicate that this is a highly satisfactory, relatively simple and inexpensive technique for providing large unobstructed spaces under a graceful and attractive roof structure. Dr. Waling had gone on to make use of this geometric form and this technique of construction to build a backyard patio cover, and finds the results of the laboratory tests sustained into actual practice.

The research group responsible for this successful experiment is now engaged in considering adaptation of the shape for other structures. One example is a spherical-type shell composed of several truncated and skewed hyperbolic paraboloids (*figure 6*). Another possibility is a barrel-type shell—an elongated structure which is composed of full, skewed hyperbolic paraboloids in conjuction with truncated, skewed hyperbolic paraboloids (*figure 7*).



Above: Figure 6. Table model of spherical type shell composed of hyperbolic paraboloids. Below: Figure 7. Space model of barrel-type shell.



This series of studies is confirmation that the combination of fresh engineering and architectural ideas with new materials being produced by our expanding technology can be expected to help provide new and useful solutions to basic construction problems. The pioneering work done by the Purdue group will undoubtedly stimulate continued experimentation with this exciting building technique.

review of plastics

A/E NEWS presents a brief survey of some of the recent developments in plastics technology and examples of application within the building field. Shown at the right is an excellent example of the growing use of plastics in architecture. It is the recently completed Beth Sholom Synagogue in Elkins Park, Pa., by the late Frank Lloyd Wright. Wright devised a plan for a hexagonal base, topped by a five-sided "tent" of translucent fiberglass panels molded of acrylic-polyester resin.

Increase show by industry

Plastics production was up 25 per cent last year to 5.6 billion pounds of raw materials, it is estimated by The Society of the Plastics Industry, Inc. This estimate compares with 4.518 billion pounds produced in 1958.

Last year's value of plastics products was approximately $3 billion compared with $2.5 billion in 1958.

In each of the last seven years the plastics industry has made a new record but 1959's 25 per cent increase over 1958 far exceeds the original expectations of 10 per cent.

On top of this large increase last year, the industry has indicated that it plans to expand 25 per cent this year. However, SPI estimates that production for this year will be up approximately 15 per cent, as it takes time to bring into being this additional plant.

For the first time in the history of the plastics industry the one billion pound mark has been passed and by two materials, polyethylene and vinyl.

Estimated production of either of these two materials in 1959 exceeds the total production of all basic plastic raw materials only thirteen years ago when 994,277,000 pounds were produced in 1946.

Based on monthly sales statistics compiled by the Society, thermosetting molding was up 11 per cent last year; thermoplastic up 24 per cent and extrusion up 45 per cent.

Use of "foamed-in-place" polyurethane and epoxy resin foam materials to produce forms ranging from structural panels to light seat cushions with high flotation properties were recently demonstrated by the Du Pont Company at the 1960 Design Engineering Show in New York City.

Typical applications on display included boat hull sections in which foamed materials provide both lightweight structural strength and buoyancy, soft molded cushions and trim materials for marine use, and rigid panels that can be used in all types of insulated building construction.

All of the foamed materials shown can be foamed in place by simple chemical mixing to fill even the most complicated types of forms. Foaming action is induced by use of a "blowing agent," a non-flammable liquefied gas.

Introduced about a year ago, the foamed materials—some types closely resembling sponge rubber which has long been used as a cushioning material—can be produced in a wide variety of types ranging from strong, rigid panels to the softest resilient sponge type. Both open and closed cell types are possible, depending upon the formulation of resins chosen.

In boat construction, the foamed materials can be used to fill the void spaces between bulkheads and hull to form a solid, high strength structure with high buoyancy and negligible weight. In the building field, rigid types are finding wide applications in structures which can be erected quickly by simply bolting together large panels of the material. Utility lines can be molded in place in the rigid panels with the foamed material providing built-in thermal insulation because the "bubbles" of the blowing agent trapped throughout the foam are exceptionally good insulators.

More urethane production

Latest developments in urethane foam production technology and end-use applications were also exhibited by the Mobay Chemical Company at the Design Engineering Show in New York.

Among the newest foaming methods were foaming-in-place, surface foaming, "one-shot" techniques for both rigid and flexible foams, and improved molding concepts.

Versatility of urethane foam's physical characteristics, combined with the new and more efficient production methods, have led to the prediction by Mobay officials that a minimum of 100 million pounds of the material in all of its forms will be produced in 1960. This is more than three times as much as was produced in 1957.

While a principle end use for urethane foam continues to be cushioning for furniture, autos and aircraft, increasing quantities of the material are going into the packaging, insulation and filtration markets. Another application that utilizes large amounts of foam is void filling, particularly in the marine industry where the flotation properties of urethane are advantageous.

With the development of rigid and semi-rigid forms of urethane foam, and the improvement of foaming-in-place machines, greater use is being made of the material for thermal and acoustical insulation. Increased structural strength given to panel walls when rigid foam is used as the core has made it possible to use lighter gage metal for the panel skins. Insulating efficiency of urethane foam used in refrigerators and freezers is enabling manufacturers to increase the cubic content of these

appliances without increasing their overall dimensions.

Open-cell urethane foam is finding a ready market in the air filtration field. Specially-produced filters are being used in more than 50 per cent of all 1960 models of room air conditioners. The washable air filters also are going into humidifiers, warm air furnaces, and carburetor air cleaners. This type of filter can be washed repeatedly in soap and water.

The excellent strength-to-density ratio of urethane foam and its ease of application gives designers a wide latitude in using it for structural reinforcement in non-functional cavities of aircraft and vessels. In addition to being light in weight, the foam resists vibration. Foam used as filler in atomic submarines weighed eight and one-half tons less than the customary pitch and wood fill. In an experiment last summer, a 12-foot fiber glass dinghy with urethane foam-filled voids dropped 165 feet over Niagara Falls and withstood 14 hours of battering in the roaring rapids below.

New catalysts, formulations, and control methods are permitting the mass-production of molded shapes for cushioning and other applications. Elimination of the pre-polymer, or "half step," method of manufacturing foam has reduced production time substantially. Progress also is being made in the development of "one-shot" foam technology for polyether resins. Up to now, use of the "one-shot" process has been confined to polyester resins which are more costly.

Improved crystalline polymers

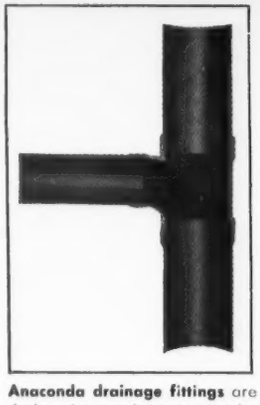
The development of new and improved crystalline polymers and new methods of processing them will greatly extend the uses of plastics, particularly as construction materials, according to a Batelle Memorial Institute chemist.

Chemist Charles W. Hamilton reveals that "a number of unique applications of thermoplastic crystalline polymers are now under investigation in several laboratories," including those of the Columbus, Ohio, research center. "In some cases, for example. these materials are being studied for uses where metals have been used extensively in the past. Plastics are being considered because of such advantages as lower cost, lighter weight, and greater durability. One specific application in which crystalline plastics will eventually become important is pipe. . . . It is anticipated that the successful development of techniques for the fabrication of oriented crystalline thermoplastics into pipe will permit its utilization in all types of applications, including those now limited to brass, copper, or glass."

The discovery about 20 years ago that an extruded monofilament of the crystalline polymer, nylon, could be stretched under special conditions to give a high-strength fiber was the prelude to a vast amount of study, Hamilton observed. This study has led to increased knowledge about crystalline polymers and how they may be processed to take advantage of their unusual characteristics. Thermoplastic, or crystalline, polymers differ from other plastic polymers in that they have a more orderly molecular structure. As a result, they have the desirable properties of a sharp melting point, good impact resistance at low temperature, and relatively high tensile strength. These properties can be controlled and enhanced because the behavior of a crystalline polymer depends on the thermal and physical processing it has received. This makes possible further improvements in performance of

(Continued from page 20)

Unretouched photo of 3" dia. copper tube removed after 13 years' service in a soil line.



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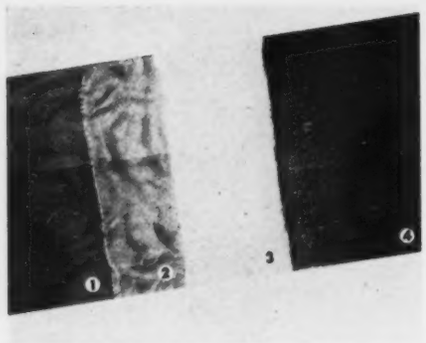
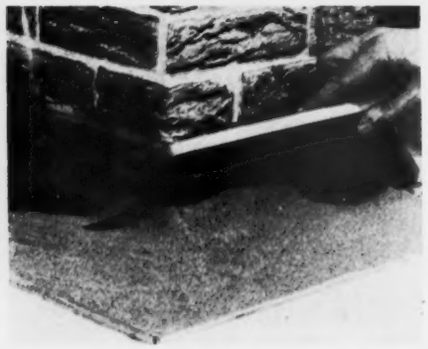
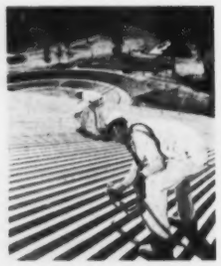
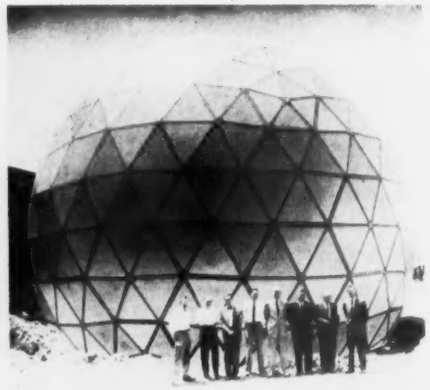


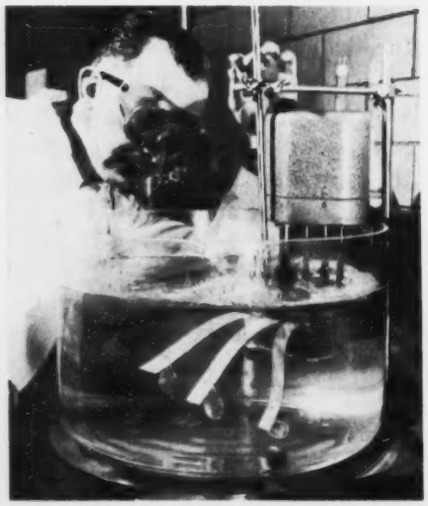


(PHOTO LEFT) new plastic home roofing and siding panels: 1. Conventional decking or side paneling; 2. Fibre glass cloth; 3. Epoxy plastic resin; and 4. Surfacing of mineral granules of desired color. (PHOTO RIGHT) Model showing flashing around chimney with use of new plastic roofing. On-the-job application in flashing is essentially the same as fibre glass cloth, plastic resin and mineral granule surfacing on prefabricated panels. Excess mineral granules are brushed away. (Photo courtesy: Shieldcoat International, Inc.)

(PHOTO LEFT BELOW) Vinyl-phenolic spray-priming of arena roof of Olympic Blyth Arena at Squaw Valley, Calif. Vinyl topcoat is later applied hot over this primed surface, assuring tight, waterproof coating. (PHOTO RIGHT) World's largest production-scale rigid plastic geodesic 'radome' consists of 285 prefabricated glass-reinforced polyester resin panels, bolted together. Considered best polyester resin because of its fire resistance and other advantageous physical properties. (Photo courtesy: Hooker Chemical Corp.)







(PHOTO LEFT) Weighted sample strips of various plastics are subjected to 180-degree water to test their heat resistance. Strips one, two and three, from right to left, are conventional vinyl, high-density polyethylene and polyamide, respectively. New polyvinyl dichloride material, farthest to the left, meets this heat requirement without sag. (PHOTO RIGHT) shows installation of new plumbing wall utilizing polyvinyl dichloride material making possible entirely pre-assembled plumbing walls that take hit-water as well as cold-water lines while retaining the corrosion-resistance and self-extinguishing properties of vinyl. (Photo courtesy: B. F. Goodrich Chemical Co.)

REVIEW OF PLASTICS

(Continued from page 19)

the plastics by such operations as quenching, annealing, stretching, cold-working, or biaxial orientation.

Because of the problems of elastic deformation and creep, the successful utilization of plastics in some heavy-duty engineering applications must await the development of new polymers, the Battelle chemist concedes. He feels that the major breakthrough and ultimate objective of the study of polymerization mechanisms is to prepare a polymer which is a "pure" compound. Hamilton defines a "pure" compound as one in which all of the molecules of the plastic will be essentially identical in size and composition, permitting true tailoring of polymer composition.

Development of a pure polymer compound, combined with better understanding of the effect of the thermal and physical treatment of plastics, Hamilton predicts, "will help to extend the applicability of crystalline thermoplastics into broad areas of usefulness as true materials of construction."

Fire test results

Results of fire tests of standard (Commercial Standard CS 214-57, Type I) glass-fiber reinforced polyester corrugated structural plastic panels as roof-lighting materials have been released by the Fiberglass Reinforced Panel Council of The Society of the Plastics Industry, Inc. The tests were conducted for the Council by the Factory Mutual Engineering Division.

The Factory Mutual Laboratories' report is a guide in establishing proper limitations for the use of the product in building roofs.

The tests were occasioned by the steady growth in the use of reinforced plastic panels for roof lighting calling for the establishment of up-to-date building code regulations for the product. Such regulations are expected to evolve out of the SPI tests.

The tests were conducted on a 20 foot by 100 foot building, exposing to fire two different roofing patterns consisting of standard reinforced plastic panels alternated with panels of noncombustible roofing (corrugated galvanized iron.)

As a result of the tests, the following recommendations were made by Factory Mutual Engineering Division for this type of panel when interchanged with noncombustible sheets in building roofs:

1. In buildings with complete automatic sprinkler protection, standard type plastic sheets may be used without area limitations.
2. In roofs of noncombustible buildings without automatic sprinkler protection where the building occupancy does not require sprinkler protection, the total amount of standard reinforced plastic used in the roof should not exceed 25 per cent of the roof area; panels of standard reinforced plastic should be separated on all sides from other reinforced plastic panels by a space of noncombustible material equal to three times the panel width; and the total area of any single area of standard reinforced plastic roof paneling should not exceed 400 square feet.
3. The method of fastening for these sheets should be capable of resisting a gross wind uplift force of either 30 pounds per square foot or 45 pounds per square foot, depending upon the geographical location, as specified in

(Continued on page 23)

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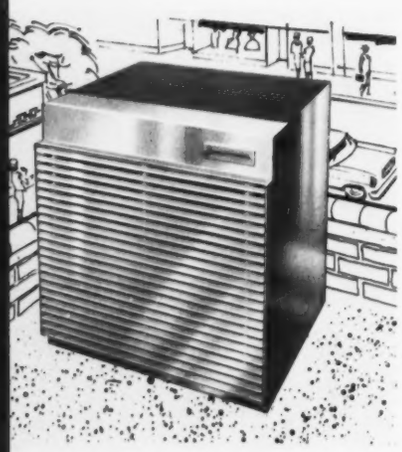

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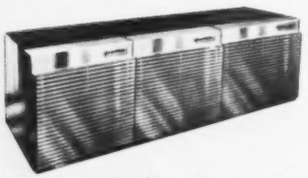

Modular cabinet design and upflow exhaust permit compact, multi-unit installations. Only the grilled, air-intake side of the cabinet requires clearance.

Any desired number of Janitrol 52 Series units may be installed together, with zero clearance between, to provide a variety of higher capacity combinations from 120,000 to over 1,000,000 btu/hr. Only Janitrol offers custom-built capacities at standard model cost!

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year 'round conditioner

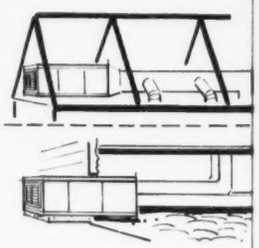
Combines quality gas heating and waterless cooling! Less than four sq. ft. of floor space needed for most installations. Features include famous Dura-Tube heat exchanger with 20-year warranty. Unique by-pass for correct air flow on heating or cooling cycle without adjustments. Powerful air-cooled 52 Series condensing unit. ADD-ON cooling—install for heating only, add cooling later.

ADD-ON COOLING

Adapts most any warm air furnace for thrifty, efficient central cooling. Cooling coil mounts in duct, attractive, air-cooled 52 Series unit goes outside. Powerful, quiet performance with outside temperatures to 125°F. Easy to install.

"J-LINE" self-contained conditioners

An economical solution for many cooling needs. One compact unit contains blower, compressor and coils. For use with ducts or as free discharge. Install through wall in crawl space, attic or other limited access locations.

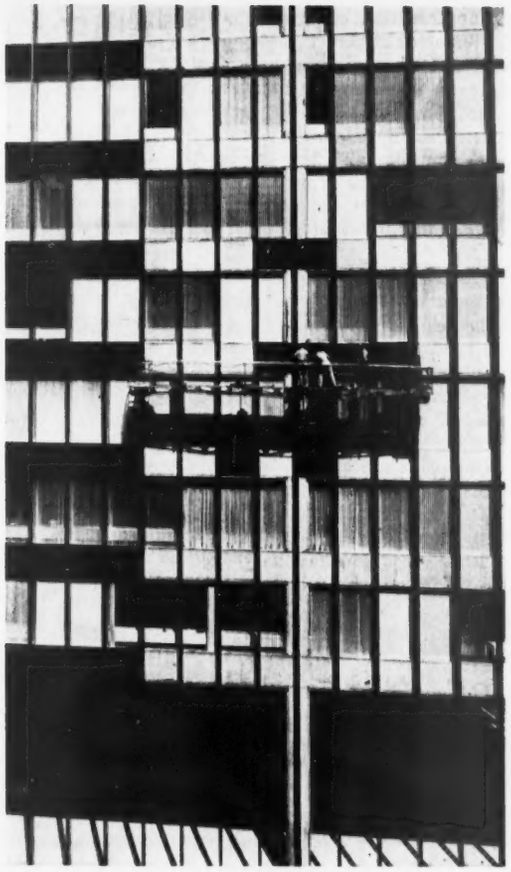


BLOWER-COIL UNITS

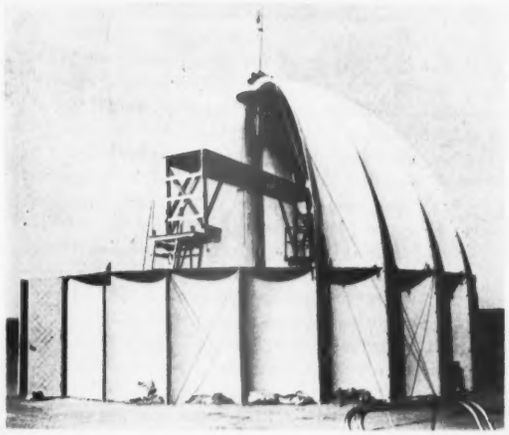
Smartly styled cabinet contains cooling coil and blower for use as free discharge or with ducts. Units are attached to ceiling to save floor space. Very quiet and efficient!

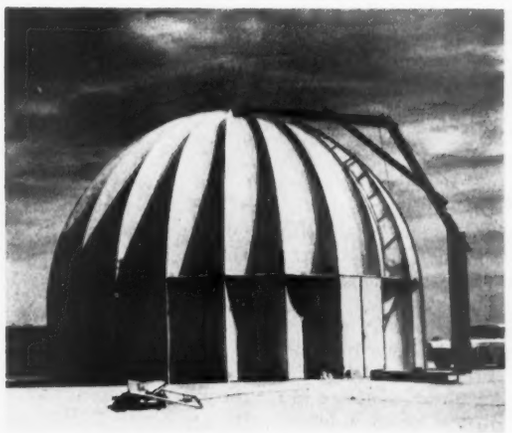
GAS-FIRED DUCT FURNACES

For installation in a duct where the air is circulated by a separate blower. Especially adaptable for industrial heating applications in combination with cooling. 73 Series in six sizes from 50,000 to 225,000 btu/hr. 72 Series in sizes 200,000 and 300,000 btu/hr. may be combined to provide unlimited capacity range.



Three metal workers shown stripping white plastic protective coating from some of the 6,824 stainless steel panels on the new Union Carbide Building on Park Avenue in New York City. (Architects: Skidmore, Owings & Merrill). Coating has shielded building's panels from general construction and weather hazards during erection. Use of plastic, a viscous water base compound is most extensive use of coating for any building project to date.





The completion of a high-strength, ultra lightweight reinforced plastic structure provides for a 36-foot diameter circular unit comprising of large, tapered segments 24-feet in length (photo above left), assembled on the jobsite. Very thin shells are critically engineered and prestressing fibers are employed within the laminate. Structure weighed 2 kips, and could be picked up by a single lifting eye at the center. It had to support a 2 kip capacity rail hoise from the shell skin and withstand 100-mile winds. Costs vary from $3.00 to $10.00 per sq. ft. of floor in single skin forms and from $8.00 to $25.00 in sandwich shells. Existing shapes available include hyperbolic paraboloids—balanced, unbalanced and warped in 2 ft. by 2 ft., 3 ft. by 3 ft., 4 ft. by 4 ft., and 6 ft. by 6 ft., long span, prestressed folded plate panels and other three dimensional vaults and shells. Photo bottom at left: progress of assembly. Photo bottom at right: completed structure. (Photos courtesy: Architectural Plastics Corp.)

(Continued from page 19)

the standards of the Factory Mutual Engineering Division.

Copies of the report may be obtained from The Society of the Plastics Industry, Inc., 250 Park Avenue, New York 17, N.Y.

Laminated film plastics

Plastics, which have experienced a phenomenal growth for the manufacture of products ranging from toys to appliances, have also enjoyed a similar growth in the construction industry. But within the next few years, the use of plastic laminates and coatings—plastics bonded to metal, paper, or other materials, or applied as coatings to existing products will supplement and in many cases supplant all-plastic materials.

In predicting this trend, manufacturers point out that bonding of plastics to kraft paper and to metal foil, or of kraft paper to foil, often results in a material having the desirable properties of both and the limitations of neither. Since the cost of laminated and coated products is competitive with conventional materials, their improved qualities will make them especially attractive to the construction industry according to the manufacturers.

Currently, plastics are increasing their hold in construction both as building materials and as construction aids. They are being used for curtain walls, ceiling panels, awning and patio roofs, rainspouts and down-spouts, insulation and flooring materials, and interior partitions and trim. As construction aids, they are being employed to provide temporary enclosures around buildings in order to permit completion during cold or inclement weather —for storage protection—and for curing concrete roads and highways, among others.

One of the latest developments in laminations is a non-combustible vapor barrier that can be used for the facing of insulation for metal buildings, for vapor-proofing heating and air conditioning ducts and pipes, and for general vapor-proofing applications.

The plastic to aluminum vapor barriers are considered an excellent example of how a combination of materials results in properties that are not inherent in either one. Vapor resistance is improved, and fire-retardant properties are added.

Individual barriers consist of a metal foil laminated to a kraft paper or plastic film with a special flame-retardant adhesive that actually releases a gas to snuff out the flame when they are subjected to high temperatures.

Heretofore, pure plastic materials were said to have one or another limitations when used as vapor barriers. For example, the rate of vapor transmission through some is relatively large. In addition, many tend to revert to their original form when stretched during application, and thus often rupture after short periods of service. Some become brittle at low temperatures, and most are combustible. However, when combined with aluminum foil, these limitations are minimized or eliminated.

This may be considered as one example of how laminated materials can be tailored to meet a requirement. From the point of view of construction and maintenance costs, it is apparent that there are many advantages to these new product developments and therefore they are certain to assume a more important role in architecturally designed construction.

←Circle 110 for further information about JANITROL

how plastics differ

by William Demarest*

It is important to realize that plastics are a group of different materials. They cannot be lumped together as one, for the simple fact that they are very much unlike each other. They differ greatly as to their important characteristics and it is these very different properties with which one should be concerned.

First, however, I would like to discuss how they *don't* differ, because I want to make the point that the plastics must be considered as a *class of materials* analogous to the metals, or the woods. Steel and brass are very different materials, and it is generally insufficient to characterize them only as "metals," although properties that they more-or-less share do logically bring them together in the "metals" group. So it is also with plastics materials. Let us first see what properties they exhibit in common, providing a logical basis for dubbing them as a group—"the plastics."

First, they are generally *corrosion-resistant*. In building applications, corrosion resistance often is the most important characteristic of a material. Another relevant characteristic presented by some of the plastics is that they are resistant to mechanical erosion, as well as to attack by certain chemicals.

Plastics generally exhibit a *low modulus of elasticity* as compared with the traditional structural materials. The modulus typical of the thermosetting plastics is roughly in the same range as that of wood or concrete, but that of other plastics is well below.

Most plastics are good *electric insulators*. This has been an important property since the earliest days of the plastics industry. Many uses for plastics in electrical equipment were widely accepted a generation ago.

Of great importance in building and particularly in the field of building regulations—is the fact that plastics materials, being organic, *can be destroyed by fire*. One, cellulose nitrate, is generally outlawed under building codes because it burns readily and rapidly. Others, once set afire, will burn more or less as do wood and paper. Still others will extinguish themselves once the igniting flame has been removed.

Another safe generalization on these materials is that they make quite good *thermal insulators*. In the years to come, one may expect to hear more of the applications of plastics in building as insulating foams. To the surprise of many, plastics materials generally exhibit a high thermal co-efficient of expansion—often five or more times that of the metals. This fact is of great importance to the designer in building; it should also be recognized by the regulatory official.

Finally, in summarizing the general characteristics of plastics materials as such, let me point out that they are not cheap. Rather than being natural materials, used as found in nature (or processed from natural materials and retaining more or less their character), plastics are synthetics. They are man-made molecules. The justification for their use in building must always rest upon their excellence of their performance and not their cheapness.

Now to turn to the different plastics materials themselves as they are today found in building. I expect that, the reader, having an interest in the subject, will be pretty much where I found myself the year before last.

At that time, I ended a period of work with the architects' and builders' associations by joining the plastics materials manufacturers to foster better understanding of plastics among building-industry people. Although I had been interested in plastics for some time and had read the available magazine materials on the subject, I was by no means sure that I had sorted out which was which by name—which characteristics went with what name, and—all told—how many different plastics are commonly found today in building. Since that time, I have boned up on the subject, and for the reader's benefit, offer a list of about a dozen plastics materials that can be distinguished for use in buildings. The reader will be relieved to find that he is probably well acquainted with almost all of them, since they are in common usage, aside from building.

Once one recognizes the plastics materials in use in everyday life and links them with the scientific-sounding chemical name for them, the reader is well on his way to getting "on top" of the subject.

There is a fascinating story behind the unaccustomed names for these "new-fangled" materials. *Polyethylene*, for example, is one with which we are all familiar; but it's a relatively new material that was first produced by the British early in World War II. I have learned that its long "handle" means just what it says. This material—waxy and flexible, as we know it—is derived from the gas, ethylene. By some sort of laboratory magic that I don't pretend to understand, the chemists succeeded in linking together the ethylene molecules into a sort of chain-molecule, repeating the ethylene unit over and over. The resultant solid plastic is called "polyethylene." A recent article in *Fortune* magazine described a very recent breakthrough in the chemistry of plastics, more important than anything since the development of nylon. This is the organization of the previously random and disarranged units of the polyethylene molecules into a neat, orderly chain of ethylene units. The resultant, the so-called "linear" polyethylene exhibits superior characteristics, between those of the old polyethylene and of nylon. One large-volume, recent popular use for linear polyethylene is those of the "hula-hoops" that our children were all playing with a few months ago.

I intend to steer clear of chemistry because I am not competent in the subject and because its technology in depth is not of the moment; but let me observe that plastics are called "*high polymers*" by the chemists because they are among those materials that are created by repeating a molecular unit in a large-molecule chain. Other typical high polymers include synthetic fabrics, adhesives, coatings and "elastomers" (or rubbery substances).

The starting point in sorting out the plastics is to differentiate between the two major groups: *thermoplastic* and *thermosetting* plastics. The latter undergo an irreversible chemical reaction at the time of their final shaping and cannot be re-softened, as can the thermoplastics, by the mere application of heat.

Hoping that the reader recognizes each of the listed plastics as a distinct material which he may have encountered in one form or another, let us indicate what application each finds in building.

Acrylics are typically used for light-transmission or control, or for vision. They can be seen as diffusers for light troffers, "bubble" skylights and so on, also in numerous decorative uses—doorknobs, etc. *Cellulosics* are also used decoratively; an interesting application of butyrate is as explosion-venting, glazing or industrial sash. *Nylon's* remarkable self-lubricating, long wear qualities have opened up mechanical uses, such as rollers for drawer-slides or door tracks. In fabric form, nylon combines with *PVC*—another self-extinguishing plastic—to provide the envelope for low-pressure-air-supported buildings that can house construction operations, store materials, etc. An excellent vapor-barrier, polyethylene film or sheeting has quickly pre-empted the field in this building application. Other important uses in this industry include cold-water pipe and electric wire insulation. *Polystyrene* is the material for plastics walltile, offered in a complete range of colors. Like several other plastics, it goes into electric light diffusers. In foamed form, it has opened a major market as thermal insulation. Watch for load-bearing sandwich panels with cores of foamed plastics such as polystyrene. These are building components

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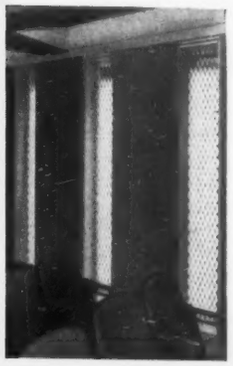
of great promise and are being developed rapidly. *Polyvinyl* chloride we see everywhere as "vinyl" floor tile which exhibits properties superior to those of other resilient flooring materials. PVC wall coverings, too, are hard to beat—both for appearance and for ability to withstand abuse. Much weatherstripping today is PVC instead of metal, which is more subject to corrosion and physical damage. In the race for a plastics pipe material that can handle the modest water temperatures and pressures encountered in most buildings, rigid PVC is a leading contender, with a vast backlog of experience in industrial installations. Turning to the thermosets, major building uses of the *alkyds* are already indicated. As the insulating material for electrical equipment, alkyd is typically glass- or mineral filled. *Epoxy* provides a wonderful adhesive material but is relatively costly. In construction, it is at present likely to be found only where the stickiest adhesion problems have to be solved, or where special properties are called for in a glass-fiber reinforced material. Although used for electrical gear and for decorative hardware, *melamine's* outstanding building application is in the form of decorative laminates under such trade names as "Formica," "Micarta," etc. A countertop and wall material that thrives on abuse, this type of product consists merely of plastics-impregated paper, laminated under heat and great pressure. The top layer, printed in color, is impregnated with melamine. The backing layers are impregnated with *phenolic*—an important plastic which has been with us so long that it has become an ever-present workhorse in the construction industry. Phenolic is a very important structural adhesive, for example, in bonding exterior-grade plywood. Nonstructurally, it provides the bonder for glass-fiber batts and boards. Its color range is limited to dark hues but, where this is acceptable, it is relied upon as an economical electrical-insulating material. Tough *polyester* films are coming into use in building. Meanwhile, the best known use of this plastic is as glass-fiber reinforced polyester sheets. These are applied as lighting panels, awnings, skylights, translucent space-dividers and the like. The reinforcement makes them very strong, as well as tough. *Ureas* are another electrical-insulating material; it is offered in a limited range of colors for electric light diffusers. Also, the resin is used for bonding some plywoods. *Silicones* are pretty much special-purpose materials and, if there is item on this list that you have not encountered outside of the building field, this is likely to be it. Silicones are applied to masonry to improve its water repellance and weatherability. *Urethanes* appear in building components only as foams. Up to now, they have not been important for architectural readers to know about, but their potentialities are such as to make them significant now. Watch for them; they should be an important factor in building before long.

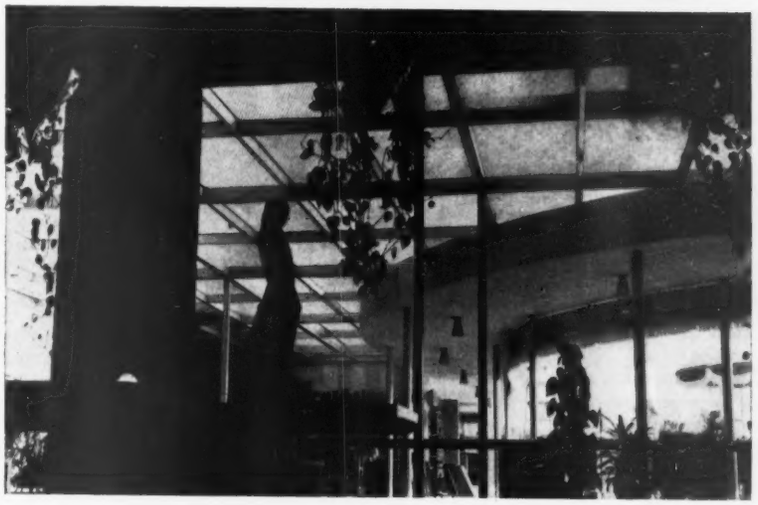
Thus hastily ticking off the common plastics, I have intentionally overlooked other kinds of organic synthetic materials that have a part in building—paints and other coatings, for instance. I would like to mention, however, that synthetic caulking and other sealing materials, gasketing and flashing show a range of properties superior to putty, oakum, cork, rubber, metals and other natural materials traditionally used for these purposes. Where one has a professional interest in such applications, it behooves you (just as with the new adhesives) to become conversant with these recently developed materials—some of which are plastics, some elastomers.

A use of Security Panel which is growing in popularity with architects is shown at the right. It is often specified as a guard on stairways in schools and plants; thus it serves its double purpose as a protective barrier and as decoration.

The striking beauty of Security Panel is shown in its use as glazing material in this church. Architects specified the distinctive Resolite Panels for the side windows of the church (below).



The lobby of a large Miami hotel has a false ceiling of Security Panel. The panels not only diffuse the light evenly throughout the lobby, but also give the ceiling an attractive, distinctive appearance.



Resolite Security Panel

A Functional and Decorative Building Material

This flat sheet—a combination of polyester resin translucent panels and expanded metal—provides the designer with a material that possesses high dimensional stability and high impact strength. Architects have found "Security Panel" desirable as cover, separation, decoration or protection, and in applications which combine two or more of these functions.

In addition, "Security Panel" is manufactured in a variety of sizes and colors. For complete information write today for our new booklet on RESOLITE Security Panel.

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engineering information all is not lost

by Ralph H. Phelps*

More or less continually, one is confronted with statements to the effect that the recent growth of the scientific and technical literature has been so great that its use is impracticable, if not impossible. In a general sense this idea goes back to the Old Testament of the Bible, which says, "Of making many books there is no end."[1] In the 1890's when the Royal Society of London was contemplating the publication of "The International Catalogue of Scientific Literature,"[2] as well as at various other times, the increasing amount of the literature and the difficulty of its use have been deplored.

Another matter about which much has been said and written since the advent of the sputniks is the extent and excellence of Soviet abstracting services, often with the implication, if not the statement, that abstracting and indexing services in the United States are inferior. I would not minimize the importance of the Soviet abstracting services; they are impressive, if for no other reason than because they have grown so rapidly since they were started in 1952. Also, because the work is centralized and many literature scientists work in one place, it is physically an impressive operation. In this country, abstracting and indexing services are generally not governmental operations and are scattered throughout the country.

If the Soviets have profited more than we have from the technical literature, I believe it is because they may have worked harder at using it. The Soviet centralized information services are not essentially better than the services available in this country. Some of the larger sections of the Soviet abstracting services have no subject indexes and are therefore very difficult to use. Incidentally, in 1957 the Soviets purchased 54 copies of the 1956 bound volume of the *Engineering Index*, which is published in the United States.

Mechanization

Mechanization is currently being studied as a means of reducing the time and cost of the handling and retrieval of literature. For small collections of literature in restricted subject fields, mechanization has sometimes proved satisfactory. For large collections in broad fields covering diverse subject material, including concepts as well as materials, mechanization is apparently many years away. Its current status and some of its many problems and difficulties have been pointed out by Warheit,[3] Taube,[4] Shaw,[5] and Rabinow.[6] The over-all problems of getting the information ready for the machine and getting it from the machine are perhaps greater than those of developing the machine. Machines work best on repetitive and routine operations. Such operations are not common in literature handling and retrieval.

Like many others, I wish that the literature could be searched more quickly and at less cost. I wish that efficient mechanized systems for large collections were now available, but they are not—not even at the very high prices charged for the large computers which are now being promoted for literature search work, despite the fact that they were designed for other work and are not particularly efficient as literature-searching tools.[4]

Despite all of the foregoing, the technical literature can be, and is being effectively used. Our present abstracting and indexing systems are not as bad as they are made out to be—not nearly that bad. While they may not all be as up-to-date as their publishers or users wish them to be, none of the many abstracting and indexing services available in the Engineering Societies Library is *even close* to being 6, 7 or 8 years behind, as such services were said to be by a witness at a recent Senate committee hearing.[7]

The same witness also gave the impression that literature searches generally take a great amount of time (he mentioned six months as one example) and that searches cost from $1,000 to $100,000 and even more. He also stated that "the little man is out." The Engineering Societies Library makes many literature searches each year for from $100 to under $1,000. These are not complete literature searches, and they may not deal with the largest and the most complex problems, but how often does "the little man" or anyone else deal with these. Letters of commendation and additional orders from those who have used the services of the Engineering Societies Library attest to the value of these inexpensive literature searches.

Up to July 31, 1958, income from the services of both the Engineering Societies Library and the Engineering Index, Inc., had increased over that of the same period the previous year—this despite the 1958 recession.

Through the activities of the Engineering Societies Library and the Engineering Index, Inc., engineers have a unique documentation center and coordinated services unmatched elsewhere in the world.

Engineering Societies Library

The Engineering Societies Library (now located in the Engineering Societies Building, 29 W. 39th St., New York, N. Y.) was established in 1913 through the merging of the long-established libraries of the American Society of Civil Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers.

The Engineering Societies Library is outstanding in its coverage of the fields of civil, electrical, mechanical, mining, metallurgical and petroleum engineering. It also extensively covers chemical engineering and all other branches of engineering, primarily on the level of the graduate and practicing engineer. The library contains over 175,000 volumes, 20,000 maps, 5,000 translations, and 10,000 bibliographies and indexes. Some 1,500 periodicals are currently received from all parts of the world; about one-third of these are in foreign languages. The coverage of Russian and other Eastern European scientific and technical publications has been considerably expanded recently, and important publications are continually added.

In addition to collecting extensively, but selectively, engineering publications of all types on a world-wide basis, the Engineering Societies Library maintains extraordinarily complete files of all technical publications and papers of the American Society of Mechanical Engineers and of the other founder societies. Its collection of these unpublished papers is particularly important, for most of them are manuscript copies not elsewhere available, not even in the societies' publications. It also, in some instances, cooperates with editorial staffs of founder societies in the preparation of published indexes.

After preprint and published stocks of their publications are exhausted, the founder societies refer inquirers to the Engineering Societies Library for photoprint or microfilm copies. Often this is done simply by transferring the inquirer's letter or order directly to the library. Sometimes the inquirer may be temporarily confused by receiving a reply from the library rather than from the organization addressed, despite the care that is taken by the library to identify the parties involved. Nevertheless, it is felt that the practice of direct transfer of requests is the best way to serve with the least possible delay.

Each issue of *Mechanical Engineering* contains a list of "books received in the library." These are some of the more than 600 brief book reviews prepared during each recent year for the journal of the founder societies, so that members may learn about new books in their fields. Most of these books, as well as others in the library, may be borrowed by members of the American Society of Mechanical Engineers and the other founder societies.

The services of the Engineering Societies Library also include a reading room open six days and five nights a week for most of the year. It is staffed by persons having library and technical training.

Thousands of requests from members for brief information which can readily be located are answered without a charge. For members and others requiring extensive information, literature searches and bibliographies are made, for a fee, to the specific requirements of the inquirer. The service ranges from recommending some books on a specific subject to the preparation of comprehensive annotated bibliographies of books, articles, and reports. Searches are also made for disclosures related to patents. All search work is kept confidential. The library's staff also prepares bibliographies on subjects of general engineering interest. These may be purchased by anyone. A list is available on request.

Translations of engineering and technical articles are made from all languages into good English by "consultant" translators who are familiar with engineering. All translations are reviewed by a member of the staff of the library to assure accuracy of translation and the quality of the English.

Photoprint and microfilm copies of the material in the library are made on request.

All of the afore-mentioned services, except loans of books to members, are available to anyone. They are used by engineers, scientists, technologists, and industry in this country and throughout the world. More than half of the users of the Engineering Societies Library do not come to the library but use its services by mail, telephone, and telegraph.

Joint ownership and support of the Engineering Societies Library by the founder societies is achieved through the United Engineering Trustees, Inc., an organization established by the founder societies to own and operate the Engineering Societies building. The Engineering Societies Library is a department

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of the United Engineering Trustees, Inc., as is also the Engineering Foundation.

Engineering Index

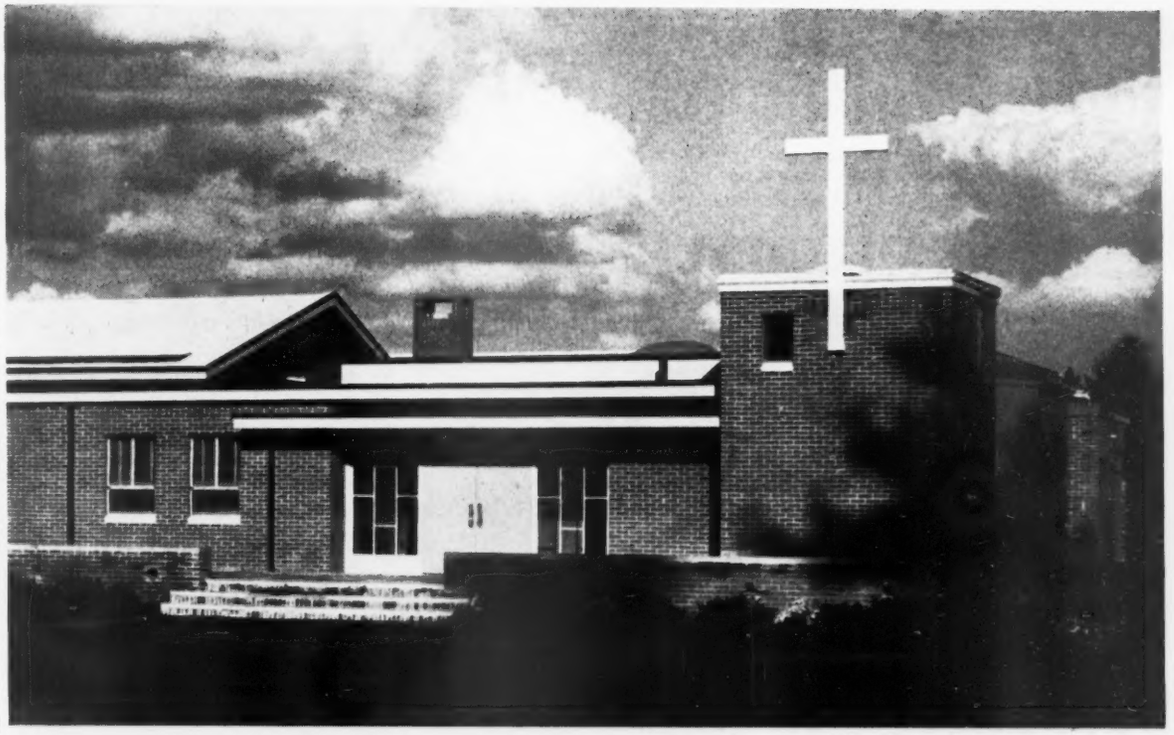
The *Engineering Index*, now in its 74th year, is an internationally accepted digest of technological literature prepared for engineers, research workers, and students. The Engineering Index, Inc., and the Engineering Societies Library, although separate organizations, cooperate closely. All publications received by the Engineering Societies Library are made available to the Engineering Index, Inc. which is housed in the same building. In the *Engineering Index* the Engineering Societies Library has a ready-made published index to articles in periodicals and other publications in the library. This unique arrangement is of great value to engineers and industry. The *Engineering Index* reviews 1,400 leading periodicals and society transactions, as well as a substantial number of bulletins and reports of governmental bureaus, research laboratories, technological institutes and colleges, and other agencies. Last year it provided annotated references to 27,000 articles. It provides a weekly card service in 255 subject divisions. Subscriptions may be placed for single subject divisions for groups of divisions, or for the entire card service. The cost of the divisions ranges from $12 to $45 each, with a total cost of $1,500 for the complete card service. Educational institutions receive a discount. The *Index* subsequently appears as a bound volume, cumulating all of the references for the year. The charge for this bound volume is $70.

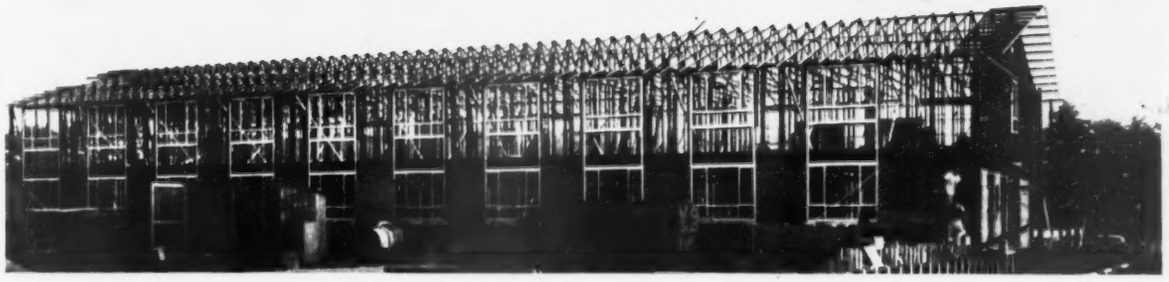
This is an up-to-date indexing service, complete with descriptive annotations of the material indexed. Inasmuch as all indexed material is retained by the Engineering Societies Library, there need be no question about where to find the original of any articles indexed in the *Engineering Index*. The articles may be read at the Engineering Societies Library, which is open to anyone, or a photoprint or microfilm copy may be ordered.

In looking to the future, it appears that the cooperative information activities of the engineering societies, the library, and the *Index* will continue to grow. The American Institute of Chemical Engineers has recently become the fifth founder society. The United Engineering Trustees have acquired land for a new building near the United Nations in New York City. It is expected that other societies will join in the support of the Engineering Societies Library when the engineering societies move into the new United Engineering Center. The better facilities to be provided and the broader base of support and interest should lead to expanded and better information services for the engineering profession.

References

1. Eccles. 12:12
2. *Science* 1, 182 (1895).
3. I. A. Warheit, "Machines and Systems for the Modern Library," *Spec. Libraries* 48, 357 (1957).
4. M. Taube, "Machine Retrieval of Information," *Library Trends* 5, 301 (1956).
5. R. R. Shaw, "Mechanical Storage, Handling, Retrieval and Supply of Information," *Advisory Group for Aeronautical Research and Development Rept. No. 50* (1956).
6. J. Rabinow, "Presently Available Tools for Information Retrieval," *Elec. Eng.* 77, 494 (1958).
7. M. L. Kastens, *Hearings before a Subcommittee of the Committee on Government Operations, United States Senate, 85th Congress, 2nd Session, on S.3126, May 2, 6, and 7, 1958* (1958), pt. 1, p. 138.





LIGHTWEIGHT STRAN-STEEL *builds a seminary*

Light enough for easy handling, strong enough to conquer stress, lightweight Stran-Steel structural systems permit new freedom in design. They're up in a hurry and up to stay. Forget about cranes and massive foundations. Stran-Steel framing doesn't require them. Pre-engineered to fit, the lightweight components can be trucked to the project site and welded into place with an absolute minimum of time and effort. A case in point is the pictured seminary under construction at North Easton, Mass., designed by William E. Cram, architect, Norwalk, Conn. The primary construction was rapid and the nailable Stran-Steel joists and studs made easy work of attaching the special collateral materials required by a religious institution. Mail the coupon for details on the broad line of Stran-Steel architectural products or phone the Stran-Steel dealer near you. He's listed in the Yellow Pages under Steel.

Stran Steel

STRAN-STEEL CORPORATION, DEPT. AEN-27, DETROIT 29, MICHIGAN

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Firm_____ Phone_____

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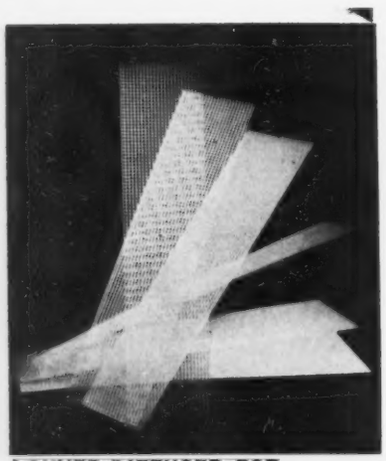
City_____ Zone_____ State_____

STRAN-STEEL IS A DIVISION OF **NATIONAL STEEL CORPORATION**

Circle 112 for further information

PRODUCTS, EQUIPMENT, MATERIALS

Report of recent developments by industry, based on data furnished by mfrs. Inquiry cards for further information face pages 1 and 56.

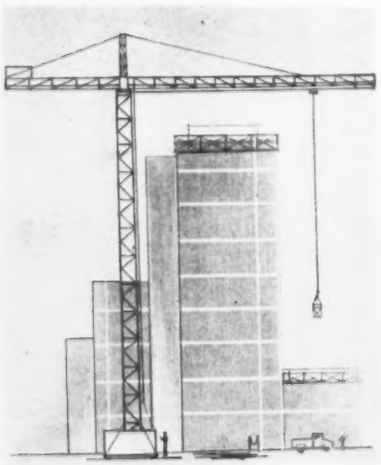


LOUVER-DIFFUSER FOR FIXTURES OR CEILINGS

MFR'S DESCRIPTION: *Mystic Gratelite* one-piece louver-diffuser is announced for fixtures or over-all electric ceilings.
USES: lighting applications.
SPECS/FEATURES: available in two nominal panel sizes, 11" x 48" or 16" x 48", *Mystic Gratelite* louver-diffuser has spear-like tips on longitudinal vanes. Features ⅜" open cubicle construction that permits dust and dirt to fall through for reduced maintenance. Product is injection molded of ultra-violet resistant polystyrene plastic, reported to assure color stability. Can be cleaned and destaticized in a detergent dip.
AIA FILE NO. 31-F-23
MFR: EDWIN GUTH CO.
Circle 200 for further information

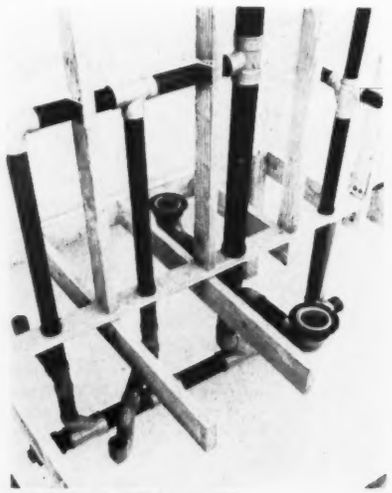
PLASTIC FILIGREE ROOM-DIVIDER PANEL

MFR'S DESCRIPTION: plastic filigree openwork panel with spring-action supporting pole offered.
USES: interior applications as room divider, window shutter, door, gateway or along a stair rail.
SPECS/FEATURES: panels clamp to upright poles with spring action, adjustable height and rubber tipped tops and feet. Available in floral or Oriental design, panels are 36" x 12" and ¼" thick. Panels stated to be colorfast, dustproofed white with either black or gold trim. Panels are ready to install and require no sandpapering, painting or punching out of holes. Can be drilled, nailed, screwed down or even bent slightly to conform with planned arrangement. Add-on units are easily installed with double support brackets. Poles available in brass plated or black baked enamel finish. Basic unit of two panels and two poles lists from $12.98.
AIA FILE NO. 26-A-5
MFR: BERNARD EDWARD CO.
Circle 201 for further information



TOWER CRANE FOR CONSTRUCTION

MFR'S DESCRIPTION: *Shlagromatic Mark I* tower crane for material handling during construction has been introduced.
USES: heavy load material handling in construction.
SPECS/FEATURES: crane extends to 100′ in height, and has a maximum reach of 65′ from center at full height with a capacity of 2,000 lbs. Capable of rotating 360° to deliver material to work crew at any part of building under construction. Crane is mounted on rails to insure maximum mobility, without costly dismantling and moving operations. Crane electrically powered. Operated by push-button controls; can be operated from top work-level as well as from the ground.
AIA FILE NO. 35-i-12
MFR: SHLAGRO STEEL PRODUCTS CORP.
Circle 202 for further information



PLASTIC DRAINAGE AND SEWER FITTINGS

MFR'S DESCRIPTION: complete line of lightweight plastic fittings introduced.
USES: vent piping, sanitary sewer systems, roof drain lines and down spouting from buildings, footing drains, leaching lines from septic tanks, drainage piping for mobile homes, etc.
SPECS/FEATURES: the fittings are supplied in styrene ABS or PVC and weigh one-tenth as much as cast iron. Materials withstand wide temperature variations and offer minimum restriction to flow. Low cost and ease of handling, installation, and installation tools are stressed.
AIA FILE NO. 29-B-8
MFR: SLOAN MANUFACTURING CO.
Circle 203 for further information

PLASTICS APPLICATIONS

WOODGRAINS ADDED TO PANEL LINE

MFR'S DESCRIPTION: four woodgrains added to *Formica* line.

USES: furniture and wall applications.

SPECS/FEATURES: *Rosewood, Macassar Ebony, Teak* and *Prima Vera* bring total of 19 colors and patterns added to line. Mfr recommends material for use as prestige furniture wood, as well as wall covering. Colors stated to be warmer and grains more authentic than former products.

AIA FILE NO. 23-L

MFR: FORMICA CORP., SUBS., AMERICAN CYANAMID CO.

Circle 204 for further information

LAMINATED PANELS FOR WOOD PROTECTION

MFR'S: DESCRIPTION: utilizing dry process laminating technique, *Tigaclad* offers high damage resistance while enhancing natural beauty of woods.

USES: mfr stresses use in furniture industry because of panel's resistance to heat and stain. Tables, office and school desks, bureaus, beds, counters, counterfronts, display cases, and shelving are suggested uses.

SPECS/FEATURES: surface properties of *Tigaclad* are result of special sheet impregnated with diallyl phthalate resin and which is bonded by heat and pressure to a veneered panel. Panels meet or exceed standards for resistance to wear scrubbing, boiling water, high temperatures, cigarette burns, and stains. Unaffected by solvents, dye, chlorine bleaches, nail polish, and beet juice stains. Surface will not absorb moisture under live steam. Thicknesses range from 9/16" to 1-3/16" with largest panel 48" x 96". All species of wood veneer except cypress and rosewood are available. Mfr cites cost saving opportunities over high pressure laminates.

AIA FILE NO. 25-B-17

MFR: RODDIS PLYWOOD CORP.

Circle 205 for further information

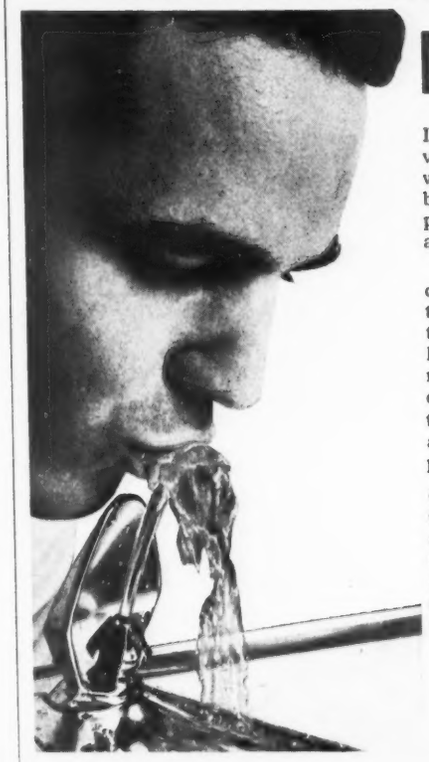
WEATHER-RESISTANT PLASTIC BUILDING PANEL

MFR'S DESCRIPTION: development of *Filoplate*, a durable, highly weather-resistant, translucent fibrous glass and nylon reinforced plastic building panel, announced.

USES: exterior applications.

SPECS/FEATURES: company guarantees *Filoplated* panels structurally for the lifetime of the installation. Also guarantees a good surface, color stability, and light-transmitting properties, under normal conditions of use for at least 15 years. Product

There's more to selecting water coolers than meets the eye . . .



LOOK BEYOND THE OBVIOUS

It will pay you to consider the *total* value found only in General Electric water coolers—that is, the best combination of performance, appearance, price, delivery, warranty protection, and service.

You'll find General Electric water coolers are years-ahead in offering this TOTAL VALUE. General Electric coolers feature clean, modern lines, a stainless steel top, and a harmonious gray finish to fit into any décor. They're economical too! Thirteen models (hot-and-cold, pressure and bottle types) are moderately priced. Operating costs are negligible.

CHECK THE YELLOW PAGES for your General Electric distributor. He can deliver the units you need immediately. A written one-year warranty on all parts and five-year replacement agreement on the refrigeration system help you avoid major repair costs. Also, nationwide General Electric service centers are always close at hand.

Add to this General Electric's long years of leadership with water coolers and you can see that only General Electric gives you TOTAL VALUE for the water coolers you buy. 761-4

GENERAL ELECTRIC

Circle 113 for further information

FULL INFORMATION ON THE TWO MOST-SPECIFIED* HARDWOOD FLOORS

permaCushion† Free-Floating Resilient Floor System

Ironbound® Continuous Strip® Hard Maple Floor

*called for "by name" more than any other hardwood floors

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Write today to Robbins Flooring Co., Reed City, Mich., Dept. AEN-760

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WORLD'S LARGEST MANUFACTURER OF MAPLE FLOORING

Circle 114 for further information

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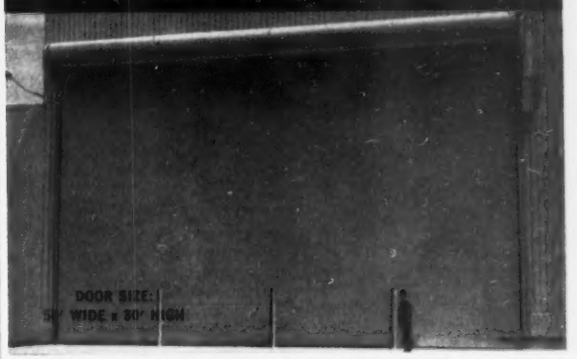

RELY ON COOKSON DOORS FOR * MORE EFFECTIVE USE OF SPACE * EASIER SPECIFICATION AND INSTALLATION * LOWER MAINTENANCE YEAR-IN, YEAR-OUT * MANY SPECIAL AND EXCLUSIVE FEATURES FOR BETTER PERFORMANCE

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Circle 115 for further information

was tested in mfr's laboratories for three years. *Filoplate* panels are produced by chemically binding an extremely light-stable, acrylic-modified polyester resin coating to the basic polyester core under rigidly controlled conditions and prior to the curing process. Material is available in 6 oz. and 8 oz/psf weights and in range of 16 colors in configurations as well as flat.

AIA FILE NO. 26-A-5

MFR: FILON PLASTICS CORP.

Circle 206 for further information

SOLID POLYETHYLENE BAR SUPPORTS

MFR'S DESCRIPTION: *P-Kay Slap Bolsters*, solid polyethylene bar supports, introduced.

USES: hold reinforcing bars in slabs, columns and beams.

SPECS/FEATURES: mfr states units slip easily into place and rigidly maintain utmost stability under normal pouring conditions. Are impervious to corrosion, light in weight, low in cost and guaranteed rustless. Range in height from ½" to 1½"; will hold No. 3 to No. 9 bar, according to mfr.

AIA FILE NO. 3-M

MFR: UNIVERSAL BUILDERS SUPPLY CO., INC.

Circle 207 for further information

FIRE-RETARDANT PLASTIC SKYLIGHT

MFR'S DESCRIPTION: fire-retardant translucent plastic skylight, introduced in *Consolite* line, is designed to provide maximum safety in fire-hazardous areas.

USES: industrial, institutional, commercial and residential uses.

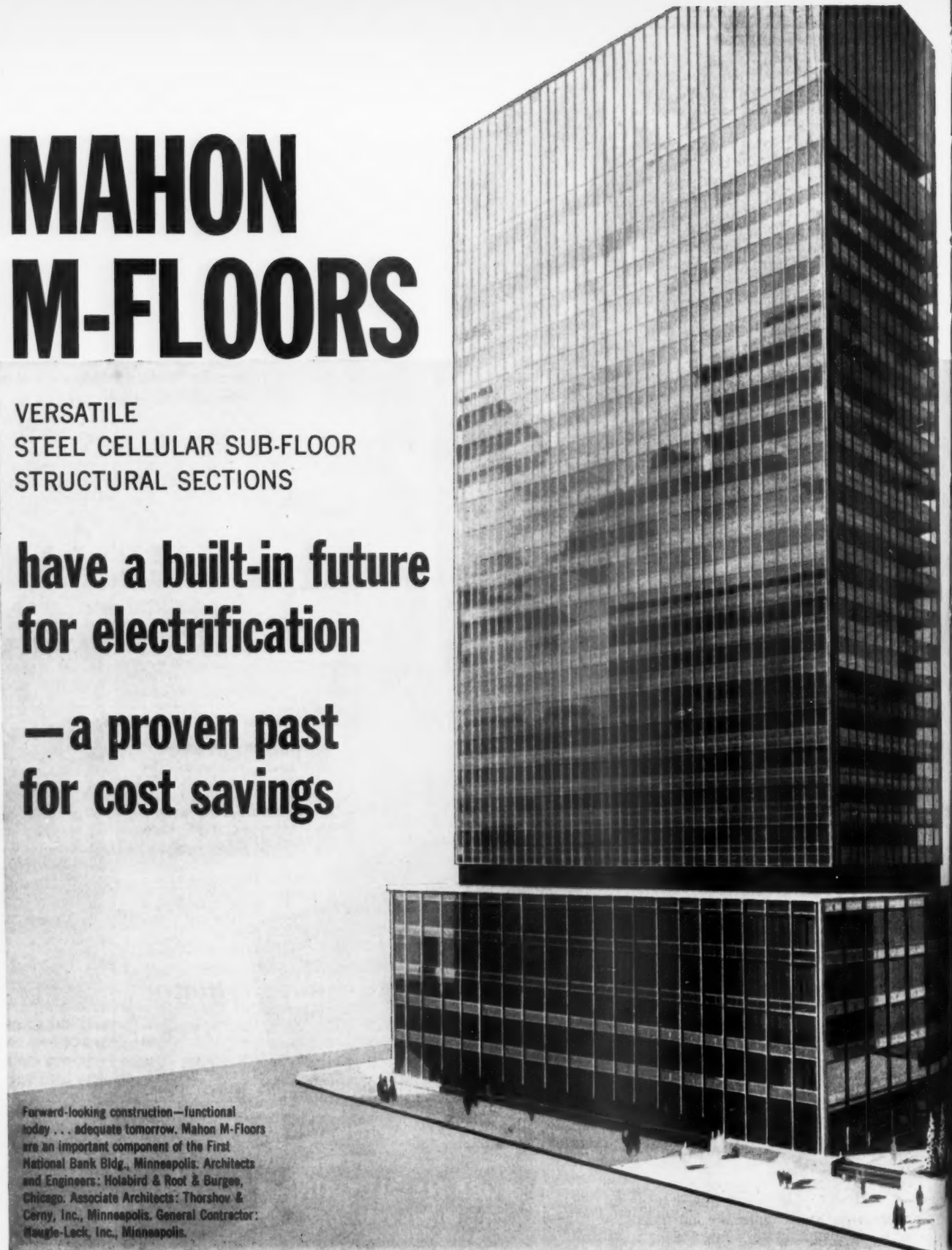
SPECS/FEATURES: shatter-and-crack-proof models developed to meet building requirements for flame-inhibiting skylights. Made of an inherently fire-resistant, self-extinguishing polyester resin, *Hetron 93-LS*, product of Durez Plastics Div. of Hooker Chemical Corp. Mfr states skylights will not support combustion, and when ignited by direct application of flame,

MAHON M-FLOORS

VERSATILE
STEEL CELLULAR SUB-FLOOR
STRUCTURAL SECTIONS

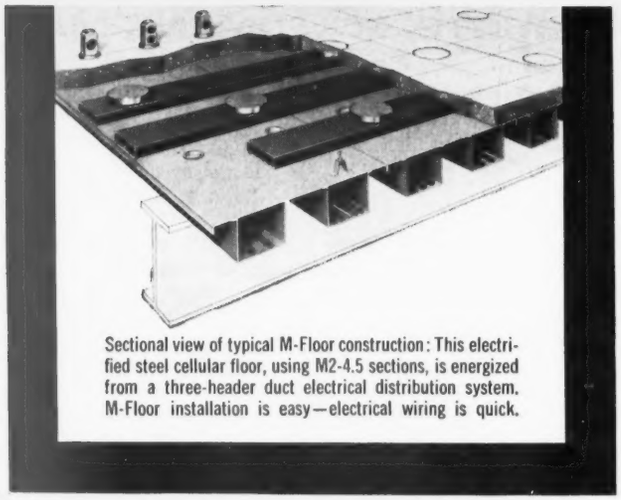
have a built-in future for electrification

—a proven past for cost savings



Forward-looking construction—functional today . . . adequate tomorrow. Mahon M-Floors are an important component of the First National Bank Bldg., Minneapolis. Architects and Engineers: Holabird & Root & Burgee, Chicago. Associate Architects: Thorshov & Cerny, Inc., Minneapolis. General Contractor: Haugle-Leck, Inc., Minneapolis.

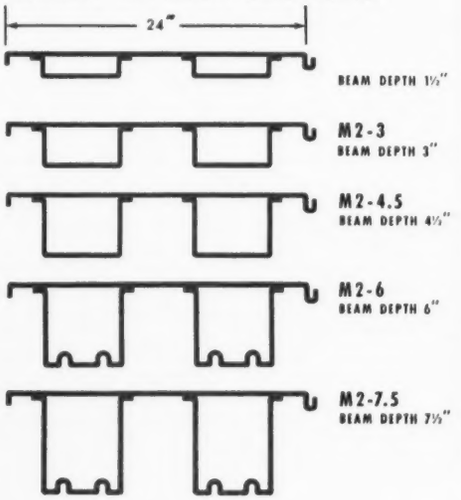
Circle 116 for further information



Sectional view of typical M-Floor construction: This electrified steel cellular floor, using M2-4.5 sections, is energized from a three-header duct electrical distribution system. M-Floor installation is easy—electrical wiring is quick.

Mahon M-Floors offer the architect and engineer economical structural advantages and easy electrical servicing of every square foot of floor space . . . give the client an ideal steel sub-floor and a raceway capacity that will not be outmoded by future electrical demands. Lightweight, high-strength steel cellular M-Floor sections are precision made by Mahon in various depths, gages and gage combinations to meet your design requirements . . . savings on foundations, installation time, construction convenience are dividends. Any type of floor covering can be used over the concrete fill . . . standard service fittings can be located wherever they are needed. To find out what versatile M-floors can do for you . . . your applications . . . your project costs . . . contact your local Mahon architectural representative, write for descriptive Catalog M-60 or see Sweet's Files.

MAHON M-FLOOR SECTIONS



MAHON BUILDING PRODUCTS

- Aluminum or Steel Curtain Wall (natural or colored metals)
- Rolling Steel Doors (Standard or Underwriters' labeled)
- Metalclad Fire Walls (Underwriters' rated)
- M-Floors (Steel Cellular Sub-Floors)
- Long Span M-Deck (Cellular or Open Beam)
- Steel Roof Deck
- Acoustical and Troffer Forms
- Acoustical Metal Walls, Partitions, and Roof Deck
- Permanent Concrete Floor Forms

CONSTRUCTION SERVICES

- Structural Steel—Fabrication and Erection
- Steel Fabrication—Weldments

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Detroit 34, Michigan
Manufacturing Plants—Detroit, Michigan and Los Angeles, California
Sales-Engineering Offices in Detroit, New York, Chicago, Los Angeles and San Francisco
Representatives in all principal cities.

SPEEDING AMERICAN CONSTRUCTION WITH METAL BUILDING PRODUCTS, FABRICATED EQUIPMENT AND ERECTION SERVICES.

M A H O N

Circle 116 for further information

unit will extinguish itself when source of flame is removed. Single domes are of one-piece construction; double domes are chemically bonded together to form an integral unit. Available for openings from 14" x 14" to 38" x 74" and in various types: rectangular, square, and round low self-flashing types; rectangular high self-flashing types; and square and round rectangular curb-mounting types. Colors—translucent, stabilized pale green or mist white.

AIA FILE NO. 12-J

MFR: CONSOLIDATED GENERAL PRODUCTS, INC.

Circle 208 for further information

LIQUID TIGHT FLEXIBLE STEEL CONDUIT

MFR'S DESCRIPTION: *Sealed Skin* conduit introduced. Features new liquid tight polyvinyl chloride synthetic resin cover for protection for wiring used in wet areas.

USES: pumps, pressers, welders, grinders, blowers, conveyors, machine and portable tools and on automatic lines for plating, molding, blasting, etc.

SPECS/FEATURES: *Sealed Skin* is equipped with a copper wire positive ground. Product said to reduce maintenance time and downtime from wiring failures. Installs quickly and easily even where "U" bends are required and space limited. Sizes ⅜", ½" and ¾" incorporate square locked construction and an extra heavy galvanized steel core; sizes 1" and 1¼" have fully interlocking galvanized steel core. UL approved.

AIA FILE NO. 31-C-62

MFR: THE INTERNATIONAL METAL HOSE CO.

Circle 209 for further information

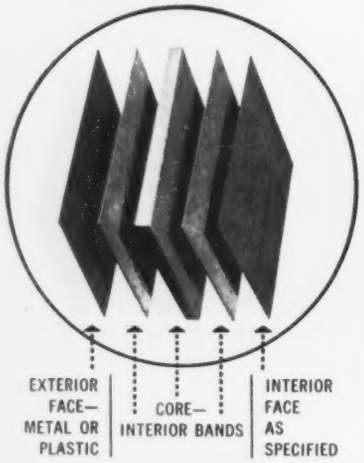
METALLIC VINYL COATINGS FOR PROTECTION OF SURFACES

MFR'S DESCRIPTION: *Magna-Bond*, a series of metallic vinyl coatings for protection of a wide variety of surfaces, is now being offered on national scale.

USES: as protective coating on wood, metal, concrete and fibrous glass, to provide hard surface that will resist abrasion and protect against corrosion and weathering.

SPECS/FEATURES: product can be applied by brush, spray or trowel and is offered in variety of colors. Chief use of *Magna-Bond* is for restoration and repair of rotted window

HASKELITE CURTAIN WALL PANELS



Virtually Unlimited Fabrication to Your Specification

Haskelite Curtain Wall Panels come in a wide choice of faces, cores and colors to provide almost unlimited design and structural freedom. They open up a wide range of design and installation advantages.

Haskelite Curtain Wall Panels:

- . . . are light in weight . . . cut handling, shipping and installation costs
- . . . have high impact resistance
- . . . are flat; wave-free surface will not buckle—unaffected by temperature changes
- . . . are permanently insulated—have low thermal conductivity, will not absorb moisture
- . . . are completely factory-prefinished ready for installation

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701 Ann Street
Grand Rapids 2, Michigan

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COMPANY_____

STREET ADDRESS_____

CITY_____ STATE_____

Circle 117 for further information

sills. Has also been used to restore chipped sinks and other porcelain products, for basement-moisture control, and as a liner for swimming pools. Product is guaranteed for three years. Is stated to be resistant to any form of weathering, alcohols, gasoline, fuel oils, inorganic acids and alkalies and to salt water; and to be non-toxic, non-flammable, electrically non-conductive, and odorless.
AIA FILE NO. 25-B
MFR: MAGNA-BOND INC.
Circle 210 for further information

SANDWICH WALLS OF FOAMED PLASTIC

MFR'S DESCRIPTION: one-step construction technique providing structure, exterior surface, insulation, and interior finish.
USES: volume housing as well as conventional housing and commercial buildings.
SPECS/FEATURES: sandwich walls are constructed around cores of foamed-in-place urethane plastic between exterior skin of aluminum or steel and interior wall surface of hardwood veneer. No other internal bracing is necessary and no fasteners required to hold outer and inner wall skins together. Foam bonds to walls with air and watertight seal, 2" providing insulative properties of 18" of stone. Adaptability for tract housing emphasized.
AIA FILE NO. 17-A
MFR: AMERICAN LATEX PRODUCTS CORP. AND DAYTON RUBBER CO.
Circle 211 for further information

EXPANDED PLASTIC NETTING MATERIAL

MFR'S DESCRIPTION: perforating and expanding, fabricating technique formerly used on metals, is now applied to plastics, resulting in expanded polyethylene and polypropylene, non-woven plastic netting.
USES: decorative grids, filter grids, athletic backstops, shrubbery protectors and similar uses.
SPECS/FEATURES: said to combine many of the best qualities of expanded metal and fabric netting with the resilience of plastic, material is available in widths of 22"-24"; nominal widths of 36", 42" and 48" are planned. Mfr claims both materials can be stabilized against degradation by sun's ultraviolet rays, making them suitable for extended outdoor use. Available in black, white and range of colors.
AIA FILE NO. 24-F
MFR: PLASTICS DIV., REEVES BROS, INC.
Circle 212 for further information

CORROSION-FREE WATER SOFTENING

MFR'S DESCRIPTION: *Water King* system features glass-reinforced polyester brine tank with extreme resistance to corrosion.
USES: homes, small restaurants, etc.
SPECS/FEATURES: brine in tank is employed to regenerate ion exchange crystals. Tank holds 20 gallons water and 200 pounds block salt. Float maintains constant brine level in tank and automatic time control provides regeneration at pre-set intervals. Entire mechanical assembly can be removed by unscrewing two bolts making easy home repairs possible. Capacity of unit is up to 30,000 grains per regeneration. Price; $350.00.
AIA FILE NO. 29-D-32
MFR: BORGERUD MFG. CO.
Circle 213 for further information

NOISE CONTROL

FISSURED ACOUSTICAL TILE DESIGNS

MFR'S DESCRIPTION: additive advantages to *Acoustone* fissured acoustical tile with development of *Profile Acoustone* and *Accent Acoustone.*
USES: interior ceiling finishes requiring acoustical treatment.
SPECS/FEATURES: *Profile Acoustone,* 12" x 12", manufactured with two kerf planes instead of one making variety of design possibilities. Adjacent tiles held by splines that fit into kerfs. To achieve designs, applicator uses alternating kerfs. *Accent Acoustone,* 12" x 24" unit is made with rabbeted edges that butt together instead of interlocking to give broad, accented joint. Products are not interchangeable.
AIA FILE NO. 39-B
MFR: UNITED STATES GYPSUM CO.
Circle 214 for further information

ACOUSTIC PANELS FOR INDUSTRY

MFR'S DESCRIPTION: standard line of noise control panels.
USES: sound barriers and partial enclosures for control of noise in industrial plants and offices. Can be used to construct supervisory offices, control rooms, complete machinery enclosures and sound isolation rooms.
SPECS/FEATURES: mfr claims rugged construction with special connecting joints assuring necessary noise reduction. Available in cold rolled steel, galvanized steel, stainless steel, and other materials.
AIA FILE NO. 39
MFR: INDUSTRIAL ACOUSTICS CO., INC.
Circle 215 for further information

PATTERNS AND COLORS IN ACOUSTICAL TILE

MFR'S DESCRIPTION: line of wood fiber acoustical ceiling products, combining colors and design with high noise-quieting efficiency.
USES: ceilings for lobbies, reception rooms, and other commercial or institutional interiors where decorative effect is desired.
SPECS/FEATURES: called *Centennial Cushiontone,* tiles are designed to create monolithic appearance which de-emphasizes individual tiles in finished ceiling. Three patterns are offered in variety of colors. Available in 12" x 12" x ½" with tongue-and-groove edge detail.
AIA FILE NO. 39-B
MFR: ARMSTRONG CORK CO.
Circle 216 for further information

INSULATION UNITS

INSULATED STEEL SIDEWALL PANELS

MFR'S DESCRIPTION: low-cost, insulated steel sidewall panels that are assembled during erection in the field.
USES: commercial and industrial buildings including office buildings, warehouses, schools, etc.
SPECS/FEATURES: panels formed by sandwiching a layer of insulating material, such as fibrous glass, between two sheets of *Truscon* 24" *Ferrobord,* or galvanized siding.

Panels reported to have heat transmission coefficient of .18. Panels furnished, painted or galvanized, in widths of 2′, and up to 40′ in length. Interlocking side joints designed to blend with fluted design of panel. Painted panels fabricated from prepainted stock for protection against rust, cracking, abrasion and weathering. Galvanized panels designed to meet AISI specification. Gages from 18 to 26.

AIA FILE NO. 12-C

MFR: TRUSCON DIV., REPUBLIC STEEL CORP.

Circle 217 for further information

NAIL WITH SEALING FEATURE FOR METAL ROOF INSULATION

MFR'S DESCRIPTIONS: *Riv-Nail* economically anchors fiberboard insulation and vapor barrier to flat or sloped metal roof decks, eliminating the need for adhesive applications and safeguarding against delamination.

USES: application of insulation to metal roof decks.

SPECS/FEATURES: *Riv-Nail* can be driven with ordinary hammer. Because of hermetic sealing feature, mfr states fastener prevents vapor migration and bitumen leakage at point of penetration. Mfr states general acceptance by roofing mfrs and recognition by many insurance rating agencies as acceptable for Class I construction.

AIA FILE NO. 27-A

MFR: ES/PRODUCTS, INC.

Circle 218 for further information

INSULATED-METAL BUILDING PANEL

MFR'S DESCRIPTION: *Arctic* panel, an insulated-metal building material, that virtually stops moisture penetration, introduced.

USES: multi-purpose construction uses in areas ranging from Arctic regions to humid, torrid zones.

SPECS/FEATURES: panel was developed to meet problems facing the armed forces in polar regions. Noncombustible, the panel is of a design that allows one-step installation—with no exposed fasteners on the exterior face. When installed, it does not require extra materials, to insure against damaging effects of moisture migration, brought about by inside-outside temperature differentials. Mfr has tested the product under recommended testing procedures, with results supported by independent laboratory. The U factor obtained on the panel during the tests was 0.094 BTU, hr/sf/°.

AIA FILE NO. 12-C-1

MFR: THE R. C. MAHON CO.

Circle 219 for further information

COATINGS/COMPOUNDS

FLOOR PATCHING AND SURFACING COMPOUND

MFR'S DESCRIPTION: *Para-Resin* is quick curing, self-bonding epoxy.

USES: all floors and floor topping.

SPECS/FEATURES: cures sufficiently for foot traffic in 4 hours at 70° F, and withstands heavy plant vehicle traffic within 24 hours. Once cured, mfr claims perfect dimensional stability without cracking, chipping, or dusting as well as complete imperviousness to water, alkalis, oils, and greases with protection against acids and solvents. Permanent bonding to concrete, wood, steel, mastic, or any clean surface. Special effectiveness is cited for problem floors such as in breweries, chemical plants, laundries, oil refineries, foundries, etc.

AIA FILE NO. 23-G

MFR: PARAMOUNT INDUSTRIAL PRODUCTS CO.

Circle 220 for further information

RUBBER AND ALUMINUM ROOF COATING

MFR'S DESCRIPTION: coating has base of butyl synthetic rubber with fade resistant colors formulated with aluminum pigment.

USES: low-cost refurbishing job for any type asphalt single roof.

SPECS/FEATURES: applied with paint roller, coating is waterproof and will not chip, crack, or peel, according to mfr, who claims 10-15 years attention-free service. Aluminum pigments reflect heat 15 per cent more than ordinary roofing. Available in green, red, white, blue, and brown at approx. $5.95 per gal.

AIA FILE NO. 25-B-4

MFR: UNITED STATES RUBBER CO.

Circle 221 for further information

DURABLE FLOOR RESURFACER

MFR'S DESCRIPTION: *Poly-Gard*, epoxy base, floor resurfacer, currently available.

USES: industrial floor treatment.

SPECS/FEATURES: mfr states product is designed to resist concentrated acids and alkalis, solvents and salts, grease and oil, heavy industrial trucking and abrasion. Is also skid-resistant and non-shrinking; available in range of decorative colors.

AIA FILE NO. 25-G

MFR: GUARDIAN INDUSTRIAL PRODUCTS, INC.

Circle 222 for further information

COATING FOR BUILDING SURFACES

MFR'S DESCRIPTION: *Tonecrete* developed, described as durable, decorative coating over 90 per cent inorganic.

USES: on interior and exterior sur-

how to Watch without being Seen

FROM THE DARKENED OBSERVATION ROOM, IT'S A WINDOW . . .

FROM THE CLASSROOM, IT'S A MIRROR!

Mirropane®, the "see-thru" mirror, has many uses . . . in schools, banks, hospitals, stores, homes . . . anywhere you want to observe — in person or with a camera — without being seen. *Mirropane* can be obtained to provide "see-thru" vision with light differentials as low as 3 to 1 between rooms. For information, call your L·O·F Distributor or Dealer (listed under "Glass" in the Yellow Pages) or write Dept. 7870, Libbey·Owens·Ford Glass Co., 811 Madison Ave., Toledo 1, Ohio.

MIRROPANE
the "see-thru" mirror

LOF GLASS

LIBBEY·OWENS·FORD GLASS CO.
811 Madison Avenue, Toledo 1, Ohio

Circle 118 for further information

faces of masonry, bricks, cement plaster, glazed tile, asbestos composition boards, painted surfaces and others.
SPECS/FEATURES: material stated not to suffer from deteriorating effects of oxidation and weather exposure, due to highly inorganic content. Reported to be fire-resistant—will not start to burn until subjected to approximately 1,600° F, an important feature for such institutional buildings as schools and hospitals. Material is available in range of colors, in choice of finish or textures: fine or coarse texture, flat or semi-lustre finish. Also described as alkali resistant, vapor permeable and easily washable.
AIA FILE NO. 24-B
MFR: DESCO INTERNATIONAL ASSN.
Circle 223 for further information

VINYL PLASTIC WALL COATING

MFR'S DESCRIPTION: one-coat, acrylic copolymer vinyl flat wall finish announced, designated, *Poly-Wall.*
USES: applications over new plaster, wall board or previously painted surfaces.
SPECS/FEATURES: reported to be odorless, and able to dry in less than 2 hours. Intended to be applied in one-coat with brush, roller or spray. Can be washed with soap and water and is capable of withstanding repeated cleanings.
AIA FILE NO. 23-D
MFR: MATHEWS PAINT CO.
Circle 224 for further information

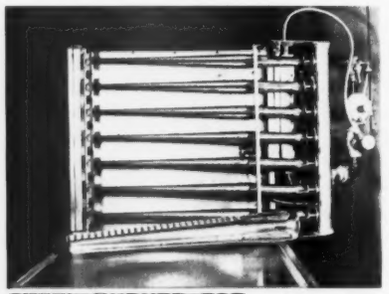
HVAC

HEATING/VENTILATING UNITS FOR LARGE AREA ROOMS

MFR'S DESCRIPTION: a line of heating and ventilating units for use in large area rooms has been introduced.
USES: auditoriums, gymnasiums, etc.
SPECS/FEATURES: units are available in 16 sizes to give a range of 1,250 to 15,000 CFM at 0" to 1¼" external static pressure. Feature acoustical chamber for quiet operation. For use with hot water or steam heating systems and may be installed in horizontal, vertical or inverted position.
AIA FILE NO. 30
MFR: SCHEMENAUER MFG. CO.
Circle 225 for further information

SINGLE AND DUAL, VENTED RECESSED GAS HEATERS

MFR'S DESCRIPTION: *Desert Sun* vented, recessed gas heaters introduced. Available in single and dual wall models.
USES: heating applications.
SPECS/FEATURES: available in capacities from 25,000 to 50,000 BTU input. Units are fully vented. Draft diverter protects burner from back drafts in flue; reverse dimple Venturi heat exchanger scrubs out all available BTU's. Units have separate header plates to permit installation at rough-in time with finished plaster or wall board applied. Installation is later completed by sliding the flue outlet through the opening in the header plate, swinging the heater into the wall opening, and fastening. Optional fan unit available which may be installed with original unit or added later.
AIA FILE NO. 30-B-5
MFR: H. C. LITTLE BURNER CO., INC.
Circle 226 for further information



STEEL BURNER FOR GAS-FIRED FURNACES

MFR'S DESCRIPTION: stainless steel burner stated to increase burning efficiency of all types of gases introduced into *DS Series* gas-fired duct furnaces.
USES: furnace units.
SPECS/FEATURES: features formed port burners with integral carryover, unit is universal with all types gases in heating values from 500 to 3200 BTU per cubic foot. Shape offers minimum turbulence or restriction giving high primary aeration coefficient. Elongated port section permits high secondary air entrainment. Burner is all resistance-welded tubular shaped unit with resistance to distortion and corrosion.
AIA FILE NO. 30-B-2
MFR: REZNOR MFG. CO.
Circle 227 for further information

AUTOMATIC VOLUME GAS WATER HEATER

MFR'S DESCRIPTION: *Gas Booster* is A.G.A. approved as automatic storage type heater and automatic circulating tank type heater.
USES: commercial and industrial water heating where automatic volume hot water is in continuous demand.
SPECS/FEATURES: has an outlet water temperature of 180°, *Gas Booster*

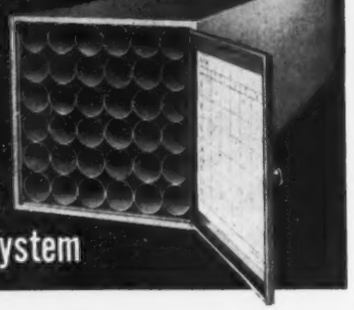
Write for Bulletin 457

S-A

SPEEDWALK DIVISION
STEPHENS-ADAMSON MFG. CO.
72 RIDGEWAY AVENUE • AURORA, ILLINOIS
PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

Circle 119 for further information

STACOR Lifetime Steel
Staktube
Roll File



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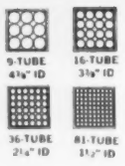
file & find system

Rolled drawings, maps, plans, blueprints, etc., stay cleaner, safer, easier to find in the new space-saving Staktube Roll File System. All steel-encased 15⅝" Square File complete with steel-rimmed tubes; **32 sizes—4 ID's, 8 lengths: 18", 24", 30", 36", 42", 48", 54", 60".** Files bolt together for stacking to any height. With locks if desired.



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331 Emmet St., Newark 5, N. J. • Bigelow 2-6600
Warehouse Stocks in: Boston, Chicago, Detroit, Hartford, Los Angeles, Montreal, Philadelphia, Rochester, Saint John, N. B., San Francisco, Toronto, Washington, D. C.

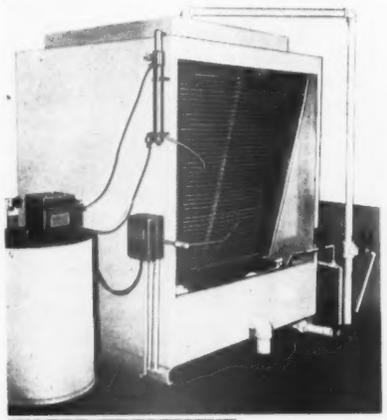
Circle 120 for further information

operates on natural, propane, and butane gases with BTU input per hour of 200,000, 200,000, and 156,000, respectively. Available in either galvanized or glasslined tank, heater features a chrome alloy cast iron target burner with no movable parts, no ports or venturi.

AIA FILE NO. 29-D-2

MFR: W. L. JACKSON MANUFACTURING CO.

Circle 228 for further information



WATER TREATMENT FEEDER AND CONTROLLER

MFR'S DESCRIPTION: *Hydrotrol* is water treatment feeder and controller designed for use with recirculating cooling water systems to prevent corrosion, mineral scale, slime, and algae.

USES: designed for use with either acid or alkaline treatments. Controller without feeder can be added to existing chemical feed pump installations to obtain above advantages.

SPECS/FEATURES: adjustments of feed and bleed-off are made continuously and automatically so that drift of treatment is eliminated. Mfr stresses savings in chemicals, water and water analyses, control labor and maintenance.

AIA FILE NO. 29-D-3

MFR: HELLER LABORATORIES, INC.

Circle 229 for further information

REMOTE WATERLESS CONDENSING UNITS

MFR'S DESCRIPTION: *Climatrol* type *938* line of remote waterless units introduced.

USES: for installation with coil and cabinet or air handling units.

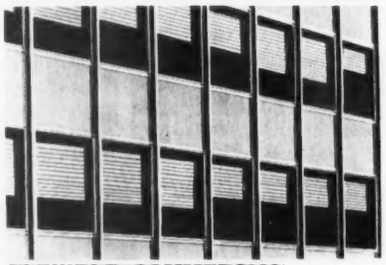
SPECS/FEATURES: available in 3, 4 and 5-ton nominal sizes. Features include large, extra capacity centrifugal blower, reported to insure quiet, dependable operation under any climatic condition. All controls, other than thermostat, located inside condensing unit and all parts accessible for installation and service. Units are weatherproofed for outdoor installation in any climate; raised base and undercoating prevent rust. Units shipped assembled, pre-charged with refrigerant and pre-wired. Rated in accordance with ARI standard 210-58.

AIA FILE NO. 30-F-3

MFR: MUELLER CLIMATROL, DIV. OF WORTHINGTON

Circle 230 for further information

COMPONENT CONSTRUCTION



FLEXIBLE COMMERCIAL CURTAIN WALL SYSTEM

MFR'S DESCRIPTION: *Series 400* curtain wall available to architect desiring complete design latitude in creating a commercial system.

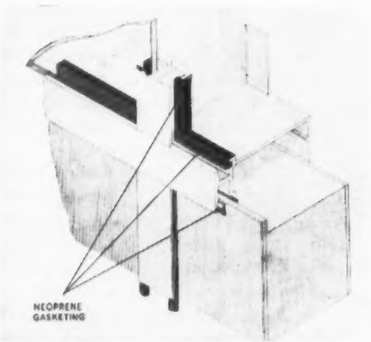
USES: curtain wall system for high-rise structures.

SPECS/FEATURES: all generally accepted spandrel panel materials can be combined with fixed or reversible windows in patterns to meet designer's visual and performance requirements. System is erected in independent mullions and one-story units consisting of sash and panel frame. Size of sections relatively independent of building height. Standard sections of aluminum extrusions, integrally keyed for weather-tight seal, erection simplicity, and provision for expansion and contraction.

AIA FILE NO. 17-A

MFR: ALBRO METAL PRODUCTS CORP.

Circle 231 for further information



REDESIGN OF SECTIONS FOR WINDOWS AND CURTAIN WALLS

MFR'S DESCRIPTION: although no obvious change in appearance of system, 42 changes have been made in extruded sections used in aluminum window and curtain wall grid system.

USES: window and curtain wall systems.

SPECS/FEATURES: changes permit gasket sealing with mfr's sections for the first time and provide for improved glazing procedure. Other developments include deeper sill members for better water drainage, ventilator weatherstripping, and new ventilator screens including a sliding wicket feature where applicable.

AIA FILE NO. 17-A

MFR: E. K. GEYSER CO.

Circle 232 for further information

SIDING WITH PRE-FORMED RIBS

MFR'S DESCRIPTION: *Sunline* siding available with pre-formed ribs at 8" intervals.

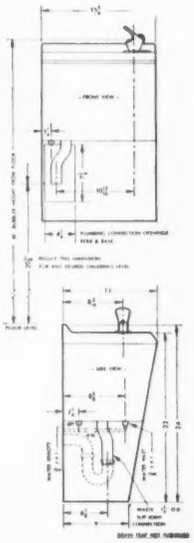
USES: horizontal or vertical siding applications over sheathing or directly to open studs.

SPECS/FEATURES: panels are 4' wide in lengths of 8', 9' and 10'. Units are 5/16" thick, with 1/2" thickness at ribs, raising them 3/16" above surface of board. Ribs are 2" wide. Feature completely hidden joints.

AIA FILE NO. 19-D-2

MFR: MASONITE CORP.

Circle 233 for further information



Haws Model HWT-13

CLEAN from every angle...

HAWS brilliant new wall mounted electric water coolers are a *clean break* with tradition! Compact design hugs the wall – leaving floor area clear! Crisp, *clean styling* is crowned by gleaming stainless steel – with plumbing and electrical unit completely enclosed. HAWS "clears the deck" for uncluttered maintenance ease and shining *clean floors*. This innovation in water cooler concept and design scores a *clean sweep* for HAWS – leader in the field since 1909! Find out about HAWS' complete line of drinking facilities. See HAWS Catalog in Sweet's Architectural File or write for your copy today.

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WRITE FOR DATA ON HAWS CAFETERIA AND RESTAURANT WATER COOLERS

Circle 121 for further information

Bally **walk-ins**

Aluminum or steel sectional construction

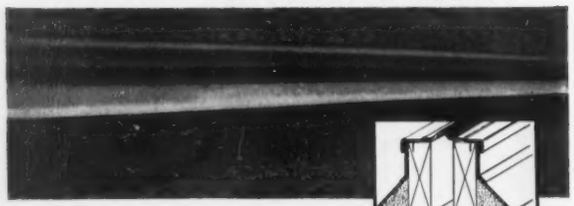
Sanitary! Strong! Efficient! You can assemble any size cooler, freezer or combination in any shape from standard sections. Add sections to increase size as your requirements grow. Easy to disassemble for relocation.

Bally Case and Cooler, Inc., Bally, Pa.

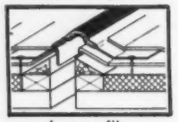
Get details — write AN-7 for FREE book.

Circle 122 for further information

Solve Your EXPANSION JOINT Problems with *Expand-o-flash* with the NEOPRENE BELLOWS



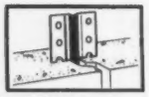
Curb roof expansion joint.



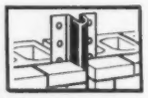
Low profile expansion joint.

Expand-o-flash is made of weatherproof flexible neoprene, bonded mechanically and adhesively to metal edging and is installed with totally relaxed neoprene bellows to allow both sides of the joint to move freely in any direction. Stresses and metal fatigue are eliminated.

Expand-o-flash provides a continuous watertight seal all around the building both above and below grade.



Expand-o-flash in vertical walls.



Shop fabricated corners and crossovers eliminate errors in the field and reduce the cost • No training needed for installation • Literature, engineering data and sample on request • See us in Sweet's.

L&R LAMONT & RILEY CO.
300 SOUTHWEST CUTOFF, WORCESTER 7, MASS.

Circle 123 for further information

SEALANTS

TWO-PIECE WEATHERSTRIPPING SEAL FOR DOOR SILLS

MFR'S DESCRIPTION: simplified *Zero #39* two-piece weatherstripping seal for door sills announced, which provides protection from sun, rain, cold and dust.

USES: weatherstripping door sills.

MFR'S DESCRIPTION: product utilizes ⅛" neoprene strip, held in place by an extruded aluminum or bronze housing. Neoprene strip projects downward to meet sill at desired point. Neoprene is retained by a ridge along the housing bottom, as well as by screws through matched and pre-punched holes in both the gasket and housing.

AIA FILE NO. 35-P-6

MFR: ZERO WEATHER STRIPPING CO., INC.

Circle 234 for further information

RUBBER SEALANT FOR WATERPROOFING

MFR'S DESCRIPTION: *E-Bond #1007* is positive, permanently pliable sealant compound based on *Thiokol* free flowing liquid polysulfide polymers.

USES: waterproofing joints of windows, curtain walls, flashings, folded plate roofs, expansion joints, etc.

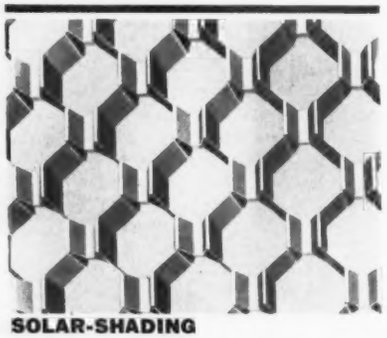
SPECS/FEATURES: described as chemically inert, *E-Bond* cures to rubber-like seal which will not shrink, crack oxidize or become brittle. Stated to have superior adhesion that bonds glass, metals, masonry or wood and remains unaffected by the most severe temperature changes. One application said to provide lasting protection.

AIA FILE NO. 7-A

MFR: INTERNATIONAL EPOXY CORP.

Circle 235 for further information

SOLAR CONTROL



SOLAR-SHADING DECORATIVE UNIT

MFR'S DESCRIPTION: *C/S Octalinear* solar-shading, aluminum grille in variety of colors introduced.

USES: as solar shading material and decorative screening.

SPECS/FEATURES: all-aluminum construction, reported durable, lightweight, and requiring minimum support. By variation of interchangeable elements, grilles of widely diversified pattern, depth and texture made possible. Four alternate cells, of varied shape, range from 4" to 8" in width, and from 1" to 7" in depth, with a cell wall thickness of .040", or .050" or heavier. Six different cell spacers permit flat, projected or recessed faces for highlight and shadow effects. Clear, blue or gold anodize, and variety of colors in epoxy, vinyl and porcelain enamel finishes available.

AIA FILE NO. 35-P-2

MFR: CONSTRUCTION SPECIALTIES, INC.

Circle 236 for further information

EXTRUDED ALUMINUM SOLAR CANOPIES

MFR'S DESCRIPTION: extruded aluminum solar canopies which provide year-round protection from the rays of the sun while lowering electrical loads, have been announced.

USES: commercial and institutional buildings from one to five stories, and are adaptable for high-rise construction.

SPECS/FEATURES: designed for cantilever installation projecting as much as 5'. Mfr states product eliminates need for drapes and curtains, and lowers ac requirements by reducing heat transmission through windows. Available in several designs, vanes are of 12 ga. aluminum. Canopies are designed to carry snow load of 30 lbs. psf.

AIA FILE NO. 35-P-2

MFR: BRISK WATERPROOFING CO.

Circle 237 for further information

OFFICE AIDS

PRE-PRINTED ADHESIVE FILM

MFR'S DESCRIPTION: all types of title blocks, standard parts, wiring diagrams, and other printed matter used repeatedly on drawings, maps, etc. can be printed in advance, in quantity, on *Dulseal*, transparent adhesive film.

USES: in addition to above, film provides durable protective coating for documents which receive frequent handling. Recommended as mending tape and cover for outdoor notices and field documents.

SPECS/FEATURES: made of .0015 inch thick acetate, *Dulseal* is available in 20 yard rolls of various widths and in sheets up to 18" x 24", plain or printed. Also in ¾" rolls 375 or 125 feet. Delayed setting action facili-

tates accurate positioning and allows material to be re-located several hours after original application. Left untouched for about 24 hours, film's adhesive sets, forming permanent bond. Matte outer surface allows use of pen, pencil, or typewriter and will take repeated erasures with no reduction in clarity.

AIA FILE NO. 35-H-3

MFR: KEUFFEL & ESSER CO

Circle 238 for further information

WALL HUNG OFFICE FILE

MFR'S DESCRIPTION: *Martin Sheet File System,* wall hung unit, offered to architects, engineers and designers.

USES: office drawing and blueprint storage.

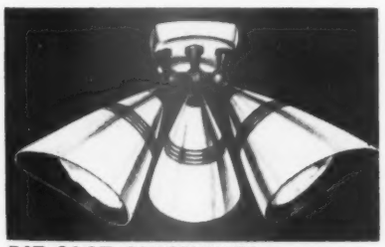
SPECS/FEATURES: described as wall-type file for handling and storage of blueprints, drawings and other large sheet materials, unit reportedly allows user to work with large number of prints more efficiently because each sheet hangs flat, eliminating curling and requiring less storage space. Construction is of steel tube frame hinged to plywood mounting panel, with locking hinge support arms. Rubber-tipped lock clips are used to mount sheets. Two models available, for sheets of 30″ and 42″. Finished in gray enamel.

AIA FILE NO. 35-H-32

MFR: LEWBILL INDUSTRIES, INC.

Circle 239 for further information

LIGHTING



DIE-CAST ALUMINIUM OUTDOOR CLUSTER LIGHTS

MFR'S DESCRIPTION: die-cast aluminum decorative outdoor cluster lights with weatherproof performance, announced.

USES: wide area floodlighting in hospitals, churches, restaurants, motels, hotels, residences and other outdoor or indoor locations.

SPECS/FEATURES: fixtures are available in three styles in wide range of colors, including satin, bronze, copper and brass epoxy metallic finishes that are reported to be unaffected by long exposure to freezing cold, salt spray, high temperatures, corrosives and outdoor weathering. All units are silicone-sealed for face-up protection in rain, snow or sleet, and fully vented for cooler, clearer operation, and longer lamp life. Line accommodates up to 300-watt reflector lamps and is UL-approved for outdoor service.

AIA FILE NO. 31-F-22

MFR: STONCO ELECTRIC PRODUCTS CO.

Circle 240 for further information

OUTDOOR WALL LUMINAIRE FOR WIDESPREAD LIGHTING

MFR'S DESCRIPTION: *480* series wall mounted luminaire introduced.

USES: for outdoor wide spread lighting.

SPECS/FEATURES: *480* series wall mounted luminaire designed for use with 300 watt lamp. Prismatic refractor made of shock-resistant *Endural* glass. Lacquered, cast aluminum, weatherproof housing with reflector, holds lens and has a stainless steel hinge at the bottom on which the face of the unit rotates for access. Light controlled by the reflector, stated to provide longer lamp life, increased output and more uniform luminosity. For installation through three mounting holes, unit can be opened without tools. A safety chain holds the glass in an open position for easy relamping.

AIA FILE NO. 31-F-22

MFR: HOLOPHANE CO., INC.

Circle 241 for further information

TESTING

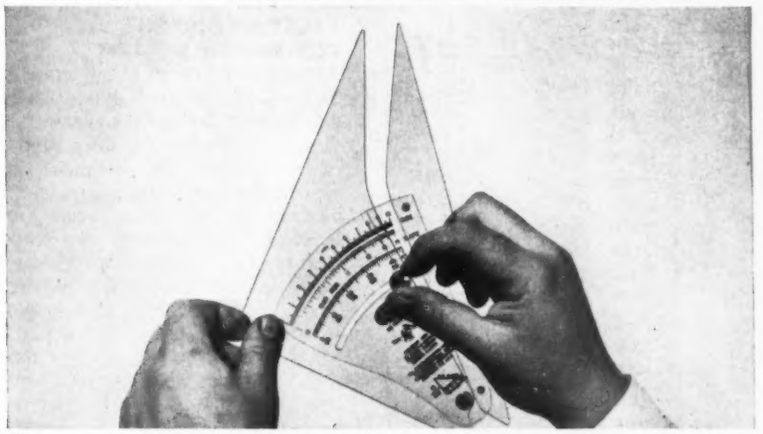
REFRIGERATED CENTRIFUGE FOR TESTING MATERIALS

MFR'S DESCRIPTION: improved version of refrigerated centrifuge—*CS&E-Imperial Model 20R*—has been announced. Designed for testing materials at room temperatures down to −20° C.

USES: in laboratories such as medical, bacteriological, biochemical, physical, and chemical, which require refrigerated centrifuging.

SPECS/FEATURES: unit accommodates all angle and swinging heads normally used on mfr's non-refrigerated size 1 and size 2 models, and on refrigerated centrifuges of all makes and sizes. Speeds up to 19,000 rpm attainable with ¾ hp motor. Uses ¾ hp hermetically sealed refrigerated compressor. Keyboard control panel

DRAFTING TRENDS



This versatile, easy-to-handle, adjustable triangle is made of yellow-tinted optical-grade acrylic plastic. A clean-cut oval track fitted with metal knurled knob assures ease of operation and lasting tight fit.

New combination protractor-triangle speeds up drafting

Architects, Engineers, Builders, Field Surveyors, Mathematicians—anyone who develops solutions to measurement problems indirectly to determine a wanted measurement graphically or mathematically—will find the Trig-Matk Adjustable Triangle a handy tool. It eliminates much of the graphic work necessary in estimating results or in checking for correct answers.

Versatility with accuracy

Basically, the new POST Trig-Matk Adjustable Triangle is a mathematician's tool—accurate to two decimal places.

It combines the functions of a protractor and a triangle into a simple unit, with two fundamental trigonometric relationships of a right triangle. The Trig-Matk provides accuracy within 1% in problems dealing with any of the six trigonometric ratios of the sides of a right triangle.

The adjustable protractor has three sets of graduations. One set is graduated in half degrees, labeled *Degrees*, and permits the use of the Trig-Matk as a protractor setting for determining any angle from 0 to 90 degrees.

The second set of graduations, labeled *Slope*, shows directly the *Secant* trigonometric ratio of the angle indicated on the degree scale. The third scale, labeled *Rise*, indicates directly the *Tangent* trigonometric ratio shown on the degree scale.

Examples

This new tool has a host of drafting and engineering applications. Highway designers find the Trig-Matk very useful when making cross sections of roadways at ground level or below. By

An indicated angle of 40 degrees on the Trig-Matk (1589) shows directly that the Rise is 8.4 to the base of 10.

setting the *Slope* scale to the degree desired, road-curve grades are automatically determined. The protractor can be used to determine the angle of highway ingress and egress lanes.

Structural Engineers will find the Trig-Matk Adjustable Triangle a simple tool, eliminating the use of both a scale and individual triangles. In addition to the time saved, many of the errors usually associated with the older method are avoided. The Trig-Matk design eliminates the need of frequent reference to handbooks for information on various bevels.

Two Bases

The Trig-Matk No. 1589-12 has a 12″ base for handy calculations in feet and inches. Number 1589-10 has a base of 10 for decimal calculations.

Keep posted on all the latest trends in drafting. Consult your local POST dealer, or write to Frederick Post Co., 3654 North Avondale Ave., Chicago 18, Ill.

POST

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Circle 124 for further information

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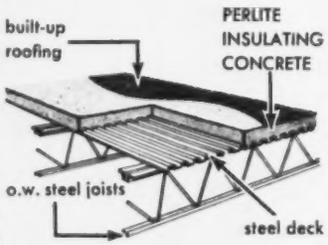
Perlite

INSULATING CONCRETE FOR ROOF DECKS



Here are only a few of the reasons why you should specify this modern, practical construction material on your next project.

Perlite Insulating Concrete

is lightweight, yet exceedingly strong where combined wide spans and high load carrying capacities are required.

Perlite Insulating Concrete

forms a fire safe permanent insulating roof deck that offers up to 20 times more Thermal insulation than ordinary concrete.

Perlite Insulating Concrete

bonds directly to galvanized metal and eliminates the necessity of a combustible bonding agent used under rigid insulation.

Perlite Insulating Concrete's

low dead load offers savings in structural steel. It may be job or transit mixed and poured monolithically on any kind of surface or pre-cast into panels or slabs.

. . . But these are only some of the many advantages offered by Perlite concrete aggregate . . . want to know more? Write today for A.I.A. file No. 37-B-2.

Perlite INSTITUTE INC.

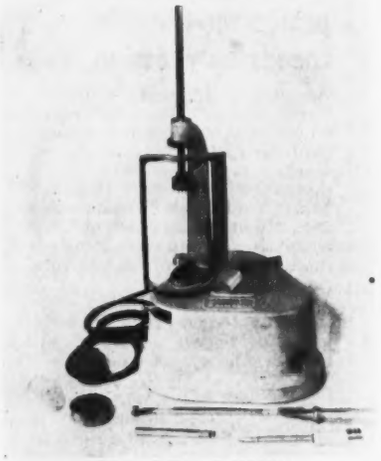
45 WEST 45TH ST., NEW YORK 36, N. Y.

Circle 125 for further information

and automatic safety interlocks. Priced at $2,425.00.
AIA FILE NO. 35-E-2
MFR: LABLINE, INC.
Circle 242 for further information

FAULT DETECTOR FOR POWER SYSTEM

MFR'S DESCRIPTION: three phase fault detector offered to indicate faults in any three phase power system.
USES: to provide warning signal in case of electrical breakdown.
SPECS/FEATURES: transistorized device stated to detect even minute leakages and provide warning by flashing lights and sounding warning horn. Said to be aid in preventing fire hazards, overheating, explosions and injury to personnel. Requires only 11½" x 14¼" wall space for mounting; contains no relay contacts or tubes which might fail or burn out, according to mfr.
AIA FILE NO. 31-i-39
MFR: GENERAL KINETICS CORP.
Circle 243 for further information



MOTORIZED SOIL LATHE SIMPLIFIES TESTING

MFR'S DESCRIPTION: job of trimming soil samples into cylindrical form for testing purposes is simplified and speeded up by model *P-400* motorized soil lathe, recently introduced.
USES: testing soils ranging from soft clays to friable pumices.
SPECS/FEATURES: soils need only be trimmed roughly to size before they are mounted on 1.4" or 2.8" diameter grips (other sizes available) for placement on lathe's turning head. Speed can be varied; mfr recommends speeds from 100 to 300 rmp. Equipment for trimming work provided. Mfr claims moisture loss by evaporation during operation is negligible. Working parts made of rust-resistant steel housed within a light-weight cast aluminum housing. Unit rests on a triangular base measuring about 14" on each side.
AIA FILE NO. 38-B
MFR: SOILTEST, INC.
Circle 244 for further information

SLIDING UNITS

ALL-CLIMATE ALUMINIUM SLIDING WINDOW

MFR'S DESCRIPTION: aluminum window suitable for all types of construction with easy installation features.
USES: block, brick veneer, stone, stucco, frame, and post-and-beam construction.
SPECS/FEATURES: *Series 500 Universal* window glides on stainless steel track and is reported to contain 18 per cent more metal than comparative windows. Two different types of weatherstripping are used; high-pile mohair on top and sides, vinyl on lower edge. Leak-proof nylon weepers are located within windowsill at each end and both vent panes and full-frame screens lift out from inside. Construction anchor provided for masonry applications.
AIA FILE NO. 16-H
MFR: RADCO PRODUCTS, INC.
Circle 245 for further information

ALL-WEATHER ALUMINIUM SLIDING GLASS DOOR

MFR'S DESCRIPTION: *Olympix* series *1200* aluminum sliding glass door provides positive weatherproof installations in areas where low temperatures prevail.
USES: sliding door applications and also as storm door.
SPECS/FEATURES: double wool-pile weatherstripping applied to all moving parts. High variation rollers and lock-keeper adjustment compensate for variation in building opening. Frame can take single or insulated glass panels. Has one-piece track, automatic key lock which eliminates accidental lockout and narrow 3" jamb which makes it adaptable as outside storm doors in conjunction with other doors.
AIA FILE NO. 16-N
MFR: LUMIDOR MANUFACTURING CORP.
Circle 246 for further information

MISCELLANY

CLOSED CIRCUIT TELEVISION SYSTEM

MFR'S DESCRIPTION: *Scan-A-Graph* closed circuit television transmitter produces sharp, intense, high resolution image without using camera or lighting equipment.
USES: business and industrial applications requiring inexpensive visual communication apparatus for transmission of static information.
SPECS/FEATURES: system eliminates camera by substituting a method of detecting and transmitting image brightness differences. Mfr. claims unit reduces focusing and distortion problems to minimum; insures instant accurate visual communication with as many as 500 stations simultaneously; and requires no specially trained personnel.
AIA FILE NO. 31-i-6
MFR: TELEVISION UTILITIES CORP., DIV., NORD
Circle 247 for further information

SCULPTURED GARDEN POTTERY

MFR'S DESCRIPTION: line of asbestos cement outdoor garden urns, vases, and other plant containers.
USES: garden, patio, poolside, room divider.
SPECS/FEATURES: imported from Austria, *Contour Garden Pottery* comes in basic natural light grey, with tinted yellow, pastel red, and green available at slightly higher prices. Sizes range from 2" high bird bath to 3' high double cone planter. Weights range from 5½ lbs. to 59 lbs., prices from $8.35 to $88.50. Line is waterproof although air permeable. Smooth surface is easily cleaned and allows no shelter for pests.
AIA FILE NO. 38-G.
MFR: SEAWAY-INTERNATIONAL CO.
Circle 248 for further information

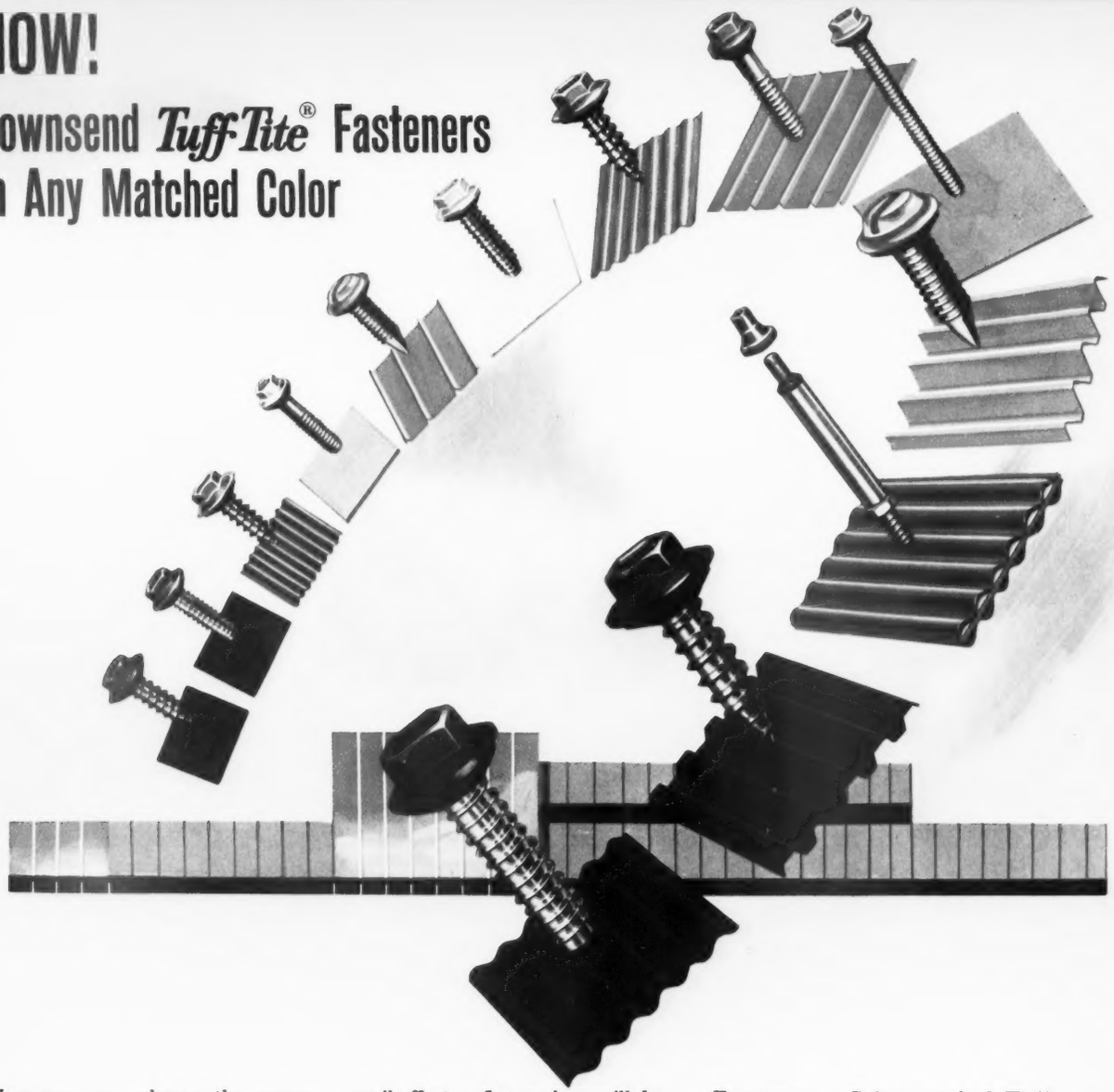
MATCHED COLOR FASTENERS FOR ANY SHEET OR PANEL

MFR'S DESCRIPTION: permanent and economical color coated fasteners,
USES: fastener for sheets and panels available.
USES: fastener for sheets and panels in exterior applications.

Circle 126 for further information about TOWNSEND CO. →

NOW!

Townsend *Tuff-Tite*® Fasteners In Any Matched Color



Now you can enhance the appearance of your buildings with fasteners that match exactly the color of the siding—and you can do it economically. After three years of research Townsend has perfected a color coated head for Tuff Tites which is permanent and attractive as well.

Perfect Match with any color panel or sheet is achieved by spectrophotometric process which eliminates human judgement in matching head to color of material. Basic Tuff Tite design traps neoprene washer under head—it will not squeeze out and spoil effect as flat washers will do.

Adhesion—Resistance to abrasion from setting the fastener is provided by a tough modified-acrylic process coating which is far superior to common paint. This patented coating was developed in cooperation with a leading producer of industrial color coatings.

Maximum Life and weather resistance can be obtained by specifying type 305 stainless steel Townsend Tuff Tite screws, bolts, and curtain wall studs with color-matched heads.

Economy — Color-matched Tuff Tites eliminate cost of installing unsightly caps or expensive daubing of paint on uncoated fasteners.

Service—Townsend stocks millions of uncoated Tuff Tites which can be quickly coated in any color to match your material. Send a small piece of material with your inquiry or order. We will do the rest.

Specify Townsend Tuff Tite fasteners with color-matched heads coated with modified acrylic coating to get the best appearance on your finished job.

Townsend Company

ESTABLISHED 1816

Engineered Fasteners Division

ELLWOOD CITY • PENNSYLVANIA

In Canada: Parmenter & Bulloch Manufacturing Company, Limited, Gananoque, Ontario

What is the function of Armstrong Acoustical Fire Guard Tile in a time-design-rated assembly?

Armstrong Acoustical Fire Guard is the first time-design-rated acoustical ceiling tile. It has been tested in a number of different floor-ceiling assemblies. Both the tile and the assemblies have received time-design ratings from Underwriters' Laboratories, Inc., of one to four hours.

To earn a rating, the acoustical tile and its floor-ceiling assembly must do two things. First, they must resist the passage of heat. This is a function of the entire assembly—the tile, the concrete slab, the air space in the plenum chamber, and the structural steel supporting the slab.

Second, the floor-ceiling assembly must support a maximum load. This depends upon the structural steel supports. If they buckle, the assembly will cave in. The protection of these steel members is the function of the acoustical tile, and the acoustical tile alone. Only the tile stands between the intense heat and the structural steel.

Official assembly hourly ratings are established when the assembly fails on either count. Structural failure never has ended a test on Armstrong Acoustical Fire Guard. (This, in spite of the fact *unprotected* open web steel joists have buckled in the test chamber in seven minutes.)

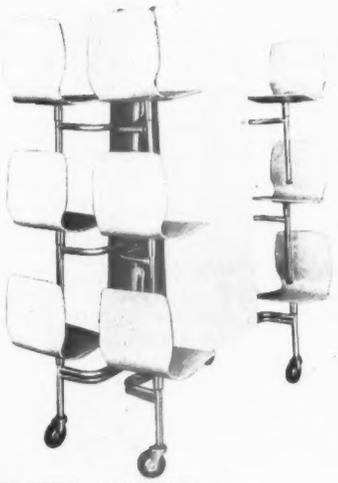
Tests on Acoustical Fire Guard always have been terminated because of temperature rise above the entire assembly. This factor could be improved with a thicker concrete slab. Variations from tested assemblies which will improve the fire-retardant rating obviously are permissible.

Before you specify your next ceiling, consider Armstrong Acoustical Fire Guard. It will help you give your client a safer building—often at a savings in cost. For more information, contact your Armstrong acoustical contractor or your nearest Armstrong district office. Or write to Armstrong Cork Company, 4207 Ryman Street, Lancaster, Pennsylvania.

Armstrong ACOUSTICAL CEILINGS

1860-1960 Beginning our second century of progress

SPECS/FEATURES: mfr states perfect color match accomplished by spectrophometrics, a process that eliminates human judgment. A tough, modified-acrylic coating, with high resistance to abrasion during fastener setting operations, is applied to heads of *Tuff Tite* screws, bolts or curtain wall studs before shipment. Coating stated to offer excellent resistance to chipping and peeling. Provides maximum life and weather resistance when applied to 305 stainless steel fasteners.
AIA FILE NO. 27-A
MFR: TOWNSEND CO.
Circle 249 for further information



FOLDING, PORTABLE TABLE/CHAIR UNIT

MFR'S DESCRIPTION: table with attached chairs permits seats free of obstruction. Fully portable.
USES: schools and institutions where eating areas must be converted rapidly for other uses.
SPECS/FEATURES: offered in contoured plywood or molded plastic, chairs are anchored to table by structural steel pedestals, which are set to one side to provide full leg freedom and to eliminate straddling. Stools are available in place of chairs and either may be folded up with table. Produced in 10 foot lengths, unit will accommodate 12 persons. Guaranteed for 10 years.
AIA FILE NO. 28-A-7
MFR: SICO MFG. CO.
Circle 250 for further information

WASHABLE WALL COVERING OF NATURAL FIBERS

MFR'S DESCRIPTION: *Royaltex* is washable wall covering material composed of natural fibers and textured fabrics.
USES: interior walls.
SPECS/FEATURES: patterns range from loosely woven jute fibers and imported linens to designs utilizing such natural materials as butterflies and leaves, against textured backgrounds. Invisible layer of *Krene* vinyl film is applied for protection against fading, dirt and other injuries. Supplied in sheets approximately 8′ long by 2′ wide, material is backed by layer of aluminum foil as moisture barrier; layer of paper is bonded to under surface to permit easy application.
AIA FILE NO. 28-C
MFR: POLYPLASTEX UNITED, INC.
Circle 251 for further information

SEVEN DOOR CHIMES KEYED TO VARIED DECORS

MFR'S DESCRIPTION: seven door chimes with varied designs and tones introduced.
USES: as signals for entrances.
SPECS/FEATURES: *Sunburst* model *260* ($6.95) sounds two tones for front and a single note for rear entrance. *Sentinel* model *267* ($8.95) has two individual resinator tubes, sounds two notes. *Bel Air* model *391* ($13.95) has free-form ornament on grille-cloth panels. It sounds twin chords for front and two single notes for rear. *Avalon* model *367* ($10.95) has antique gold finished ornament accenting the grille covering. *Melody* model *227* ($4.95) is available in ivory plastic with gold decoration or white with silver decoration. *Colonial* model *326* ($7.95) is available in either polished brass or chrome. Has "Martha Washington" ornament on face. *Rhapsody* model *531* ($29.95) has signals for three entrances.
AIA FILE NO. 31-i-13
MFR: THE EMERSON ELECTRIC MFG. CO.
Circle 252 for further information

STAINLESS STEEL FOOD SERVICE EQUIPMENT

MFR'S DESCRIPTION: *DecorLine*, a line of stainless steel and *Formica* food service equipment introduced.
USES: restaurant and mass-feeding installations, including back-bars, dining rooms and double-service equipment.
SPECS/FEATURES: among features are flush-front construction; semi-concealed hinges; triple chrome-plated brass hardware, all welded stainless steel refrigerator door backs; and wide selection of *Formica* or any other nationally distributed plastic laminate.
AIA FILE NO. 35-C
MFR: STAINLESS FOOD EQUIPMENT CO.
Circle 253 for further information

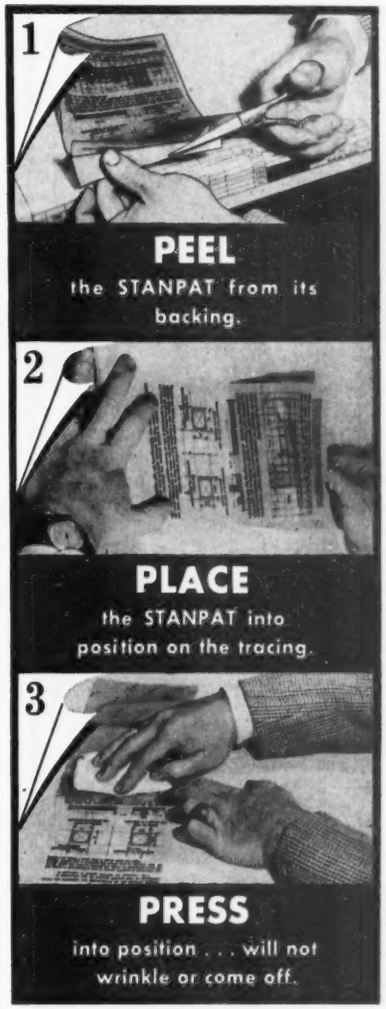
SELF-CONTAINED AUTOMATIC WATERFALL

MFR'S DESCRIPTION: completely self-contained, automatic waterfall fountains offered. Require no water connections or special plumbing as same water circulates over-and-over again.
USES: interior and exterior applications.
SPECS/FEATURES: small, electric centrifugal pump, 110 v. ac, operates unit with no more current needed than that for a small household appliance. Water circulates and cascades in a regulated, uniform flow. Special diffuser device prevents splashing permitting indoor use in any area. Bowls and fountain available in turquoise or white with contrasting over-all design. UL approved, unit weighs 18 lbs. Size is 22″ high by 31″ by 31″. Price range from $29.95 per unit. Circular planter available for unit priced at $7.95.
AIA FILE NO. 38-G
MFR: BERNARD EDWARD CO.
Circle 254 for further information

THIN CERAMIC FACING MATERIAL

MFR'S DESCRIPTION: moderately-priced ceramic facing material in large-sized modular units.
USES: hospitals, schools, commercial buildings, industrial plants.
SPECS/FEATURES: ⅜″ thick, light weight, produced in sizes up to maximum of 18″ x 24″, *CV Durathin* is available in unrestricted choice of colors. Face distortion and size tolerance limited to 1/16″ or less. Units available with bull nose on one, two, or three sides. Face to wall dimension 1″ . . . ⅜″ facing, ⅝″ mortar.
AIA FILE NO. 23-A
MFR: FEDERAL SEABOARD TERRA COTTA CORP.
Circle 255 for further information

THIS IS THE CORRECT EASY WAY



Don't chain your engineers to time-consuming routine on repetitive blueprint items . . . free them for more creative work and save countless hours of expensive drafting time with STANPAT.

STANPAT prints these items on tri-acetate sheets that are easily transferred to your tracings. No special equipment required . . . reproductions come out sharp and clear . . . and STANPAT is incredibly inexpensive.

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☐ Please quote on enclosed samples.
☐ Kindly send me STANPAT literature and samples.
Dept. 10

Name_____
Title_____
Company_____
Address_____

Circle 128 for further information

LITERATURE

Literature cited in this department is available from various manufacturers and associations free of charge, except where indicated. To obtain copies, circle the keyed numbers on the reader service cards facing pages 1 and 56.

MOBILE BENCHES

Illustrated guide to selecting mobile bench and table units for school multi-purpose rooms is currently available. Descriptions of materials, structural features and architects' specifications provided for each unit. Also lists factors to aid selection, including: room usage; number of students; storage facilities and scheduling needs. (12 pp.)

AIA FILE NO. 35-B-3

MFR: HOWE FOLDING FURNITURE, INC.

Circle 300

300

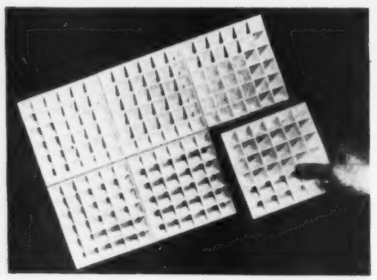
PLASTIC DIFFUSER

Current catalog announces development of plastic modular diffuser, designed for use on new or existing ceilings. In addition to sound ratings, performance data and related engineering information, catalog stresses high impact and flame retardant qualities of material and variety of air patterns and sizes of units which are stated to be especially adaptable to tile and metal pan suspension systems.

AIA FILE NO. 30-J

MFR: CARNES CORP.

Circle 301



301

STEEL CATALOG

Indexed catalog available, listing steel products. Information given for planning and ordering structural steel, manhole frames, gratings, valve boxes, stairways, ladders, etc., for use in highway, commercial and institutional construction. Engineering diagrams of products are given. (86 pp.)

AIA FILE NO. 13

MFR: APEX STEEL CORP., LTD.

Circle 302

IRON/STEEL TESTS

Results of 8 year corrosion tests on wrought iron and 10 structural steels in salt water and lake water environments contained in current report. Bulletin contains comparative corrosion-time curves, weight loss tables and discusses fully test materials, conditions, methods and results. (12 pp.)

AIA FILE NO. 13-A

MFR: ENGINEERING SERVICE DEPT., A. M. BYERS CO.

Circle 303

302

TEST METHOD

Currently available bulletin describes the Sand Equivalent Test Method—i.e., a rapid field test which shows relative proportion of detrimental fine dust or clay-like material in soils or fine aggregates. Test is used by engineers, contractors and testing laboratories; is standard procedure employed by many state highway departments. Bulletin contains complete instructions for performing test as well as photographs of actual procedures and necessary apparatus. Instructions include sections on sample preparation, test procedure, calculations and reporting, precautions and operator qualifications. (4 pp.)

AIA FILE NO. 3-D-2

MFR: SOILTEST, INC.

Circle 304

PLASTICS

PLASTICS PROPERTIES

Physical, electrical, chemical and optical properties of 9 thermoplastic materials are provided in available literature. Reprinted from *Modern Plastics Encyclopedia*, table covers such properties as tensile, impact, flexural and compressive strength; resistance to sunlight, water, weak and strong acids and alkalies; dielectric short-time strengths and constants; power factors; machining qualities, hardness, flexibility and thermal properties. Data is compilation of manufacturers' test results. (6 pp.)

AIA FILE NO. 24

MFR: CADILLAC PLASTIC & CHEMICAL CO.

Circle 305

PLASTIC DRAWERS

Booklet suggests and summarizes uses of *Styrene* molded drawers with particular emphasis on built-in storage space. Mfr stresses products' dimensional stability, light weight, and pre-finished fronts. (12 pp.)

AIA FILE NO. 28-A-5

MFR: PLASTICS DIV., MONSANTO CHEMICAL CO.

Circle 306

INDUSTRIAL PANELS/PANES

Polyglas and *Polyglaze* reinforced plastic, fibrous glass panels and window panes are discussed in brochure currently offered to architects. Colors, sizes, weights, corrugations and grades are presented in tabular form. Additional technical data includes such physical properties as fire-resistance, insulation properties and load strength. Units are UL approved. (4 pp.)

AIA FILE NO. 26-A-9

MFR: AMERICAN POLYGLAS CORP.

Circle 307

FIBROUS GLASS PANELS

Folder highlighting decorative line of translucent, reinforced fibrous glass building panels offered, featuring illustrations of applications, color charts and specifications for residential and industrial lines. Allied data presents installation details and information on glazing with flat panes, heat and sunlight resistance

and protective qualities. (8 pp.)
AIA FILE NO. 17-A
MFR: ALSYNITE DIV., REICHHOLD CHEMICALS, INC.
Circle 308

LIGHTING EQUIPMENT

SPECIFICATION MANUAL

Engineering specification manual offered for line of sound equipment, including central sound systems for schools, institutions and industrial applications. Single, dual and three channel systems are covered with typical systems specifications for sound coverage. Offered to architects and engineers, manual includes general specifications, auditorium systems, microphones and speaker assemblies. (65 pp.)
AIA FILE NO. 31-i-7
MFR: RAULAND-BORG CORP.
Circle 309

FLEXIBLE LIGHTING

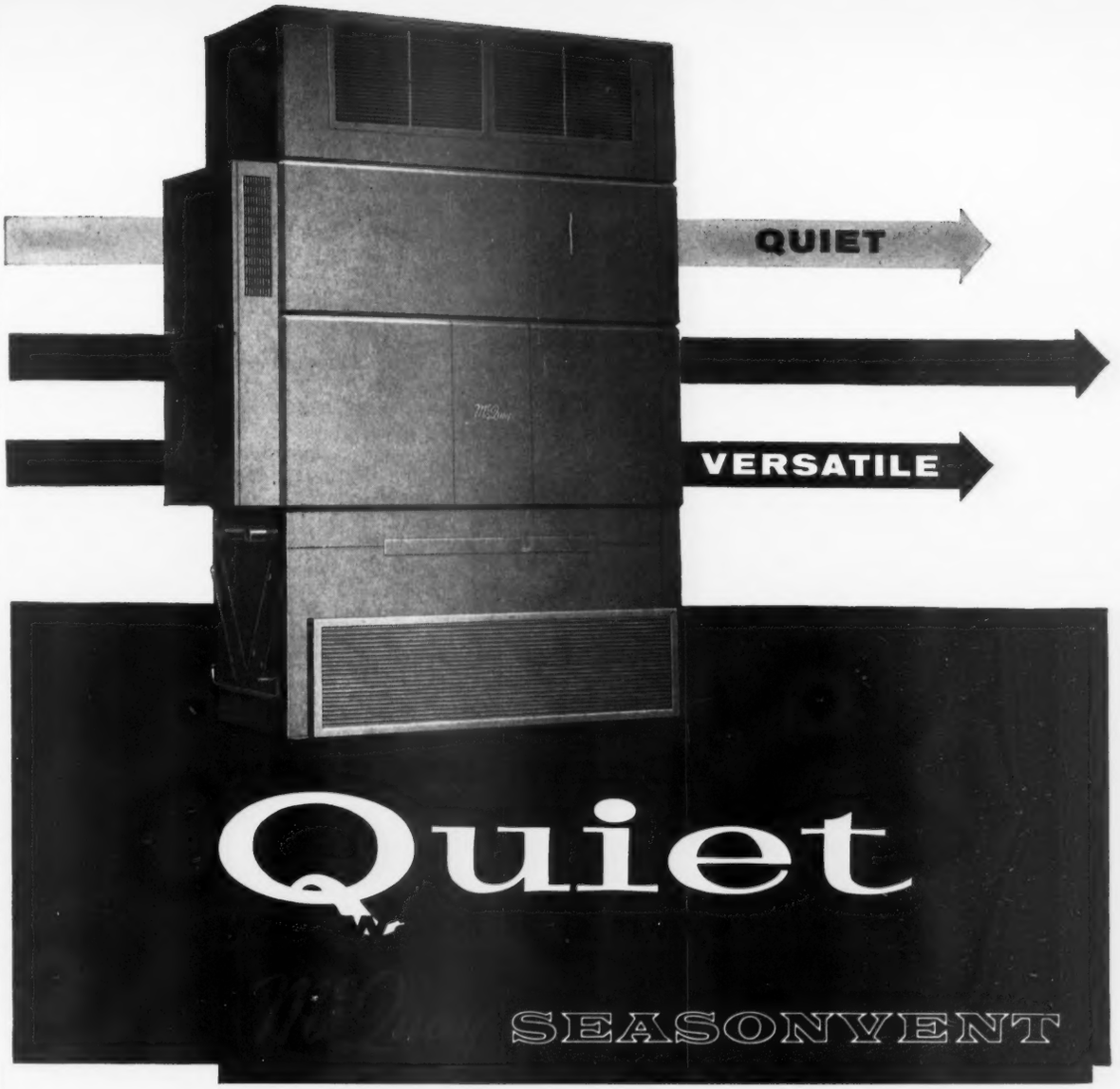
Topical booklet pictures and describes four methods of lighting and eleven types of fixtures to be used to achieve lighting flexibility. Fixtures are illustrated for applications in perimeter, area, task and accent lighting. Also gives technical information on line of *Luxtrol* light controls, ranging in capacity from 200 watts through 450 watts, 800 watts to 1800 watts. (24 pp.)
AIA FILE NO. 31-F-25
MFR: THE SUPERIOR ELECTRIC CO.
Circle 310

FIXTURES CATALOG

Catalog of lighting fixtures offered, grouping fixtures in sections for ease of reference. Publication is illustrated to show fixture dimensions and construction details. Expanded photometric data is contained to show efficiency, brightness and utilization figures for each lamp and diffuser shown; suggested specifications and ceiling mounting information also contained. (102 pp.)
AIA FILE NO. 31-F-23
MFR: LITECONTROL CORP.
Circle 311

LIGHTING DESIGN BOOKLET

Footcandle Levels & Interior Lighting Design is current booklet of footcandle and lighting design tables, offered at $.10 per copy. Footcandle recommendations for industrial, commercial and residential applications are included, in addition to information on coefficients of utilization and maintenance factors and data on fluorescent, incandescent and mercury vapor lamps. Booklet also



heating and ventilating unit

The highly efficient sound-absorbing plenum sections and internally mounted fan motors make the McQuay Seasonvent quiet in operation—the ideal unit for auditoriums, theatres and similar installations. The Seasonvent is super efficient, too, and extremely versatile, with nine sizes for low static applications (0″ to 1¼″) and seven sizes for high static operations (1″ to 2″), with capacities from 1250 to 15,000 cfm.

for horizontal vertical or wall mounting arrangements

When you want quiet operation, you'll surely want the new, quiet Seasonvent. Call your McQuay representative for complete information, or write McQuay, Inc., 1669 Broadway Street N. E., Minneapolis 13, Minnesota.

McQuay INC.
AIR CONDITIONING • HEATING • REFRIGERATION

TV leans Quality

Circle 129 for further information

Push-it
Rock-it
Roll-it
Press-it

THE ALL-NEW

P&S *ROCKER-GLO SWITCH*

. . . the switch that *looks* right, *feels* right and *is* right for every type of wiring job.

Here is the one switch with the most wanted features on the market today.

The merest touch causes instant, silent action . . . and Rocker-Glo glows in the dark.

Available in Despard and narrow rocker types.

Write for brochure, Dept. AE-76

P&S PASS & SEYMOUR, INC.
SYRACUSE 9, NEW YORK

60 E. 42nd St., New York 17, N.Y. 1440 N. Pulaski Rd., Chicago 51, Ill. In Canada: Renfrew Electric Co., Ltd., Toronto, Ontario

Circle 130 for further information

Specify The Best!

Give your client

JEFFREY GARBRIDDER

Food Waste Disposers

Specifically Designed for:

- SUPERMARKETS
- DRIVE-INS
- RESTAURANTS
- HOTELS
- HOSPITALS
- INSTITUTIONS

Wherever food is served

Available in 2, 3, or 5 HP Models

Dishtable under-counter unit illustrated.

Free Standing Central Stations also available.

There is a specific Jeffrey GARBRIDDER to solve any food waste problems. Each unit is precision constructed for efficient, economical food waste disposal and long, trouble-free service.

Write, wire or phone TODAY for descriptive brochure and dimensional Installation Drawing.

The Pioneer in Commercial Food Waste Disposers

MANUFACTURED FOR OVER 50 YEARS

UNITED MANAGEMENT CORPORATION
EXCLUSIVE NATIONAL DISTRIBUTOR
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Telephone ROgers Park 4-1720

Circle 131 for further information

LITERATURE

contains sections on interior wiring, including uses and types of building wire, allowable capacities of insulated conductors and list of standard wiring symbols, among others. Request literature on letterhead, enclosing payment, directly from Lamp Div., Westinghouse Electric Corp., P. O. Box 388, Bloomfield, N. J.

AIA FILE NO. 31-F

MFR: LAMP DIV., WESTINGHOUSE ELECTRIC CORP.

Write manufacturer directly

RECESSED FIXTURES

Line of recessed lighting fixtures for residential and commercial uses is treated in recent catalog. Installation instructions, light curves and coefficient tables are included, as well as detailed drawings of recessed units which include square, rectangular, opal glass, round, adjustable beam, shower and aisle light types. Feature of line is frame-within-a-frame design for vertical and horizontal square housings to eliminate light leakage. (36 pp.)

AIA FILE NO. 31-F-23

MFR: MOE LIGHT DIV., THOMAS INDUSTRIES, INC.

Circle 313

LIGHTING EQUIPMENT

Illustrated catalog containing data on *Steber* line of lighting equipment including *High Bay* fixtures and line of standard (RLM) and shallow dome reflectors all with *Lectri-Lok* safety electrical disconnect, all aluminum *Vaporite* industrial fixtures, and rear-lamped aluminum floodlights. Net trade prices are included in condensed catalog No. CTC-4. (28 pp.)

AIA FILE NO. 31-F-2

MFR: STEBER MANUFACTURING CO.

Circle 314

BUS DUCT DATA

Application data for plug-in, low-impedance, high-frequency and electric-utility bus duct contained in recent booklet. Descriptive matter and illustrations aid in illustrating variety of applications. Specifications, engineering data and test results also included. (12 pp.)

AIA FILE NO. 31-C-621

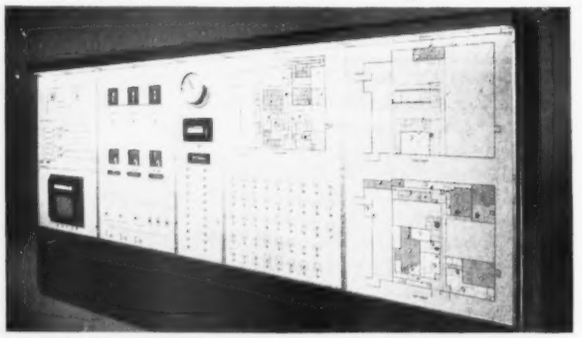
MFR: WESTINGHOUSE ELECTRIC CORP.

Circle 315

SIGNAL MANUAL

Current manual describes air and electric signal systems and lists specifications for horns, bells, buzzers, chimes and sirens. Publication includes sections on gravity drop and

Centralized
"Electrionic" control
completes the system



Barber-Colman *"Electrionic"* remote control of air conditioning and other mechanical services delivers continuous complaint-free comfort—efficiently and economically—with the speed, dependability, and installation economy afforded only by an electrical system.

One operator may supervise the entire building. He can check temperatures and readjust control points without running from point to point throughout the building.

Service requirements are reduced. Constant monitoring saves fuel and power. Improper functioning of any unit is immediately detected before costly damage may be done. *Send for new Bulletin F-8944.*

BARBER COLMAN

BARBER-COLMAN COMPANY
Dept. G, 13124 Rock Street, Rockford, Illinois

Circle 132 for further information

COMING SOON

a&e news special editorial emphasis issues

september interiors issue closing date august 15

october curtain wall components issue closing date september 15

plan now to tell your product story in these issues

lamp type annunciators and accessory equipment, such as door openers and clocks. Selection of proper type of signal for various background noise levels and work areas is illustrated by charts and diagrams. (88 pp.)
AIA FILE NO. 31-i
MFR: SPERTI FARADAY, INC.
Circle 316

WINDOWS

WINDOW BULLETIN

Wood-A-Lume wood and aluminum windows, available in 25 sizes and 70 combinations for casement, awning and picture window types, described in available literature. Units have condensation-free wood interior permanently bonded to rustproof, tarnishproof, anodized aluminum exterior, according to mfr. Bulletin contains installation details and specifications for application with frame, brick veneer, concrete block and masonry construction. Details on selection and installation of units included. Mfr recommends product for schools, professional buildings, motels, multiple housing units and apartment houses; also for unusual fenestration requirements. (12 pp.)
AIA FILE NO. 16-L
MFR: BUILDING PRODUCTS DIV., JERVIS CORP.
Circle 317

WEATHERSTRIPPING

Your Guide to Windows and Screens, Bulletin W, contains a complete list of domestic and foreign fabricators of residential, commercial and monumental prime windows, storm windows, and curtain wall units who use *Schlegel* woven pile weatherstripping in their products. Also includes design and application data concerning woven pile weatherstripping. (8 pp.)
AIA FILE NO. 35-P
MFR: THE SCHLEGEL MANUFACTURING CO.
Circle 318

INSULATION

CELLULAR INSULATION

Expanded-cell type tube and pipe insulation, designed for architectural applications in areas requiring refrigeration and air-conditioning service, is subject of recent literature. Microscopic photograph shows composition of material, called *Presst-O-Cel*. Additional information is provided on product's characteristics as insulator for stopping condensation, reducing heat loss and serving as major barrier. Included are ASTM test and allied data concerning watertightness, K factor, oil, acid and alkali resistance, weight, inflammability, density and resistance to oxidation and deterioration. (4 pp.)
AIA FILE NO. 37-D
MFR: PRESSTITE DIV., AMERICAN-MARIETTA CO.
Circle 319

INSULATING FILL

Recent folder presents facts on water-repellent vermiculite fill for insulating masonry walls in homes and commercial buildings. Comprehensive tables of heat transmission coefficients are shown for cavity walls of brick, tile or stone, for backup walls with different facings and for concrete block walls with various block sizes. Construction drawings, coverage tables and short form specifications are included.
AIA FILE NO. 37-C-2
ASSN: VERMICULITE INSTITUTE
Circle 320

LIGHTWEIGHT INSULATION

Current brochure describes *Microlite*, lightweight, blanket-type fibrous glass insulation for heating or air-conditioning ducts or combination heating-cooling ducts. Standard application methods are illustrated for all type ducts, ranging in thickness from 1" to 2" and in 24", 36" and 48" widths. Government specifications and UL ratings are included. (6 pp.)
AIA FILE NO. 37-D-2
MFR: JOHNS-MANVILLE
Circle 321

CONCRETE ROOF DECKS

Recent bulletin describes and pictures use of perlite insulating concrete for roof deck insulation construction. Detail drawings and photographs aid in discussion of specific applications and problems that were overcome by using material. (2 pp.)
AIA FILE NOS. 3-D-3; 37-B-2
ASSN: PERLITE INSTITUTE, INC.
Circle 322

REFLECTIVE INSULATION

The Story of Reflective Insulation is technical data book providing information on techniques of home and industrial insulation. Drawings and text combine to explain basic methods of heat transfer, convection and conduction. Charts and tables show comparative thermal efficiency of materials; National Bureau of Standard evaluations of major insulations are listed. Publication gives explanation of condensation and evaluation of resistance provided by various insulation materials to vapor transmission. (28 pp.)
AIA FILE NO. 37-C-3
MFR: REFLECTAL CORP.
Circle 323

MASONRY UNITS

MASONRY ANCHORS

Adjustable anchors for masonry walls, featuring flexibility in design, are treated in current booklet, *Expanding Horizons in Masonry Design*. Dimension and detail drawings are given, with illustrated applications and suggested specifications. *Econo-Lok*, for composite masonry walls, and *Econo-Cavity-Lok*, for cavity walls, are available in four finishes. (8 pp.)
AIA FILE NO. 4-D-3
MFR: AA WIRE PRODUCTS CO.
Circle 324

FALLOUT SHELTERS

Booklet entitled, *Clay Masonry Family Fallout Shelters*, presents complete plans for construction of five brick and structural tile residential fallout shelters. Units, suitable for location in or near the home, include: basement shelter in existing home; basement shelter in new home construction; underground shelter; and two aboveground shelters. In addition to fallout protection, shelters said to afford protection from such natural disasters as tornadoes and hurricanes. Units stated to meet standards for effective shelter established by the Office of Civil and Defense Mobilization. (16 pp.)
AIA FILE NO. 4-E-71
ASSN: STRUCTURAL CLAY PRODUCTS INSTITUTE
Circle 325

CONCRETE CURING COMPOUNDS

Literature is available on *Horncure* concrete curing compounds, 100 per cent resin base, white pigmented, and wax resin base types, with complete descriptions, advantages, uses and specifications. Also complete data on semi-automatic hand sprayer, offered free with purchase of *Horncure*. (4 pp.)
AIA FILE NO. 4-C-2
MFR: A. C. HORN CO., SUN CHEMICAL CORP.
Circle 326

STRUCTURAL CLAY

Bulletin *SB-60* describes structural clay products for light construction field including a variety of building brick, glazed and unglazed facing

NEW ECONOMICAL SHOWERS

BRADLEY

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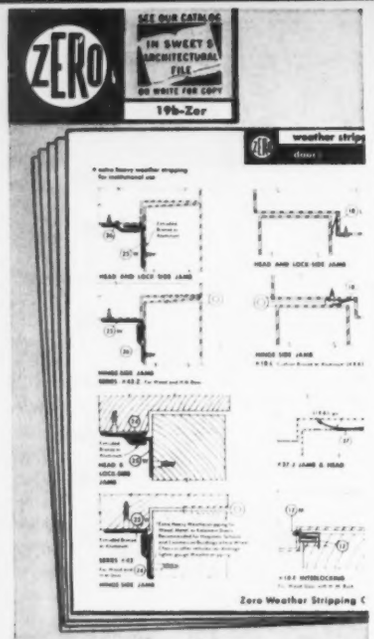
Bradley

BRADLEY multi-person showers

Write for Bulletin H-1322

Circle 133 for further information



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Circle 134 for further information

LITERATURE

tile, *Vitri-Seal* clay sewer pipe, drain tile, and flue lining. Nominal sizes and installation suggestions are also given. (4 pp.)

AIA FILE NO. 10-A

MFR: NATCO CORP.

Circle 327

CLAY TILE

Topical brochure describes basic designs and functions of *Mal-Tex* structural clay tile. Suggested installations are presented for either partition or load-bearing applications. Use of material said to facilitate imaginative decorative effects. (4 pp.)

AIA FILE NO. 29-B-6

MFR: MALVERN FLUE LINING, INC.

Circle 328

HVAC

AIR-CONDITIONING GUIDE

A guide aimed at simplification of engineer's or contractor's specifications for all types of air-conditioning and related equipment. Particular attention is paid to the effects of existing job conditions; specifically, extremely critical, critical and non-critical conditions. Also discussed are the factors involved in the selection of various resilient mountings commercially available. Illustrated with photographs. (6 pp.)

AIA FILE NO. 30-F

MFR: THE KORFUND CO., INC.

Circle 329

WELDING INFORMATION

STEEL PIPE USES

Uses of welded steel pipe, including heating, plumbing, sprinkler systems, snow melting, ice rinks and scaffolding, are illustrated in current bulletin. Literature illustrates 20 different applications and *Spang* continuous weld process and tests. Includes 6 pages of specification tables for 3 weights of ⅛" to 12" pipe and couplings in black and galvanized. (18 pp.)

AIA FILE NO. 29-B-3

MFR. THE NATIONAL SUPPLY CO.

Circle 330

WELDING AID

Filler Metal Selection Chart offered to engineers and others as aid in specifying correct filler alloys for all recommended wrought alloy parent metal combinations. Chart said to make filler alloy choices possible based on parent metal combinations and common service requirements demanded of welded assemblies. Alloys are rated for: ease of welding; strength of welded joint; corrosion resistance; service stability at temperatures exceeding 150°F; color match after anodizing; and ductility. (4 pp.)

AIA FILE NO. 36-L

MFR: ALUMINUM CO. OF AMERICA

Circle 331

WELDED STEEL TUBING

Technical bulletin contains quick reference weight chart for square and rectangular welded steel tubing in addition to a comprehensive listing of square and rectangular welded tubing tolerances for twist, straightness, cutting length, corner radii, and diagonal dimensions. (4 pp.)

AIA FILE NO. 29-B-3

MFR: THE STANDARD TUBE CO.

Circle 332

SEALANTS

WATERPROOFING MASONRY

File sheets available describing *Tuscoat*, acrylic polymer material for waterproofing concrete, cinder, haydite, adobe, brick and similar type porous masonry. Sheets describe development of product and its present uses. Qualities, such as cohesion, adhesion, curing, stability, toxicity, application rate and other physical properties also discussed. (4 pp.)

AIA FILE NO. 7

MFR: TUSCO CHEMICALS, INC.

Circle 333

PAVEMENT SEALER

Lastek 33, rubberized liquid for sealing cracks in asphalt and concrete pavements, is described in available bulletin. Specifications and suggested applications are given for material which is stated to be suitable for cracks up to ⅜" wide. Instructions for preparation of surface and table showing amount of material required are also included. (2 pp.)

AIA FILE NO. 4-P

MFR: MAINTENANCE, INC.

Circle 334

FOOD SERVICE UNITS

FOOD SERVICE MANUAL

Illustrated manual offered as summary of ideas and techniques for paper food service, gathered from various food service operations throughout the country. Stressing paper food service, manual's chapters cover special situations in hospitals, inplant feeding, restaurants and schools, in addition to general problems encountered in all types of quantity feeding. Topics include cost of paper food service, planning kitchens for paper and water service and storage and disposal of paper, packaging, electronic cooking and freezing. (60 pp.)

AIA FILE NO. 35-C-3

ASSN: PAPER CUP AND CONTAINER INSTITUTE, INC.

Circle 335

COFFEE/URN DATA

Current catalog presents significant features and advantages of *Tri-Saver* line of coffee urns. Features, drawings, specifications, photographs, information on water and fuel connections and explanations of why different urns are used in varying operations are presented. Catalog also covers 12 models in 20 sizes from 3 to 300 gal capacities, in single, combination, twin and 2 and 3 piece batteries. Topics such as coffee brewing, urn maintenance, reduction and economy also covered. (28 pp.)

AIA FILE NO. 35-C-3

MFR: S. BLICKMAN, INC.

Circle 336

FOOD WARMER LINE

Illustrated catalog presents models of *Vapormatic* moist heat food warmer line. Catalog describes process by which temperatures are automatically maintained for individual foods, and includes chart to indicate position of dials for maintenance of correct temperatures. Also shown are number, sizes and combinations of containers standard in models which range from 2' 6" to 6' 0". (6 pp.)

AIA FILE NO. 35-C-13

MFR: THE BASTIAN-BLESSING CO.

Circle 337

POOL EQUIPMENT

POOL EQUIPMENT

Comprehensive catalog offered, describing over 400 products for building, improving and maintaining all types of swimming pools. Literature depicts such items as diving stands and boards, ladders, life guard chairs and other deck equipment, underwater lights and preformed niches, built-in skimmers, filter systems, line of engineered fittings for concrete, vinyl liner, fibrous glass and metal pools, as well as paints and chemicals. Section is included on pool care and maintenance, discussing water treatment and purification, pool cleaning, painting, winterizing and pool safety. (36 pp.)

AIA FILE NO. 35-F-2

MFR: PARAGON SWIMMING POOL CO., INC.

Circle 338

SWIMMING POOLS

Modern Swimming Pools of the World, compiled by Dr. Dietrich Fabian, technical advisor on Olympic standards, is hardcover book designed to describe and picture swimming pool installations throughout the world. Majority of the pools illustrated were designed to meet Olympic standard requirements. Coverage includes 181 pools, 208 plans and 7 construction tables giving detailed information on specific pools. Cost is $10.00. Request literature directly from: National Pool Equipment Co., Lee Highway, Florence, Ala., enclosing payment. (148 pp.)

AIA FILE NO. 35-F-2

MFR: NATIONAL POOL EQUIPMENT CO.

Write manufacturer directly

WOOD USES

WOOD TRUSSES

There's Nothing in the World Like Wood Roof Trusses is current folder illustrating advantages of engineered wood roof trusses in commercial and industrial construction. Offered to architects and engineers, in single copies or bulk quantities, folder emphasizes economy, permanence and dependability of engineered timber construction and lists directory of fabricators who furnish units. (4 pp.)

AIA FILE NO. 19-B-3

MFR: TIMBER ENGINEERING CO.

Circle 340

OVERLAID PLYWOOD

Current catalog furnishes details on medium density overlaid plywood, including technical specifications, method of manufacture, grade, physical characteristics and advantages. Catalog illustrates and describes various uses of material, such as siding, gable ends, accent panels and cabinets. Advantages said to permit savings of up to 30 per cent on labor and painting. (4 pp.)

AIA FILE NO. 19-F

MFR: SIMPSON LOGGING CO.

Circle 341

REDWOOD HOMES

Booklet emphasizes use of natural redwood finishes, saw-textured redwood siding and paneling with color photographs illustrating homes designed for their own use by U.S. architects including Winston Elting, FAIA, and Ernest Born, FAIA. (16 pp.)

AIA FILE NO. 19

ASSN: CALIFORNIA REDWOOD ASSN.

Circle 342

MISCELLANY

PANELS/SKYLIGHTS

Line of curtain wall panels and skylights is described in three recent catalogs. Literature provides construction details, suggested applications and accessory data on (1) *Seaporcel* and *Seaporclad* laminated, insulated curtain wall panels; (2) *Seaporlucent* translucent building panels; and *Seaporlite* skylights. Treatment includes styles, shapes and sizes of units. (8, 8 and 12 pp.)

AIA FILE NOS. 17-A; 12-J

MFR: SEAPORCEL METALS, INC.

Circle 343

PATTERNED GLASS

Decorates-Separates-Brightens is illustrated booklet suggesting imaginative uses of patterned glass to solve decorating problems in commercial and public buildings. Photographs portray suggestions which range from transforming dark areas into bright, cheerful work spaces to hiding unsightly pipes and radiators. Use of material stated to be versatile and practical method of dividing large spaces into smaller, comfortable offices. (12 pp.)

AIA FILE NO. 26-A

MFR: AMERICAN-SAINT GOBAIN CORP.

Circle 344

DRAPERY SAMPLES

Collection of fibrous glass drapery samples offered. Intended as reference work, book includes 128 fabrics in various weaves and color ranges, designed for use in hospitals, offices, apartments, hotels, schools and public buildings. Specifications, information on weaves, fabrication and hardware are included. Request sample book, on letterhead, directly from Architectural Div., Glass Fabrics, Inc., 620 North Almont Drive, Los Angeles 46, Calif.

AIA FILE NO. 28-D

MFR: ARCHITECTURAL DIV., GLASS FABRICS, INC.

Write manufacturer directly

DRAPERY HARDWARE

Catalog *No. 108* offered, presenting descriptions and application illustrations for line of drapery hardware. Information covers such products as traverse rods, track and accessories, curtain and sash rods, round and wood wares, drapery accessories and miscellaneous accessories and tools.

AIA FILE NO. 27-C

MFR: STANLEY-JUDD DIV., THE STANLEY WORKS

Circle 346

CLOCK CATALOG

Brochure describes line of *Motion Notion* clocks designed by George Nelson, AIA. Clocks comprise 17 designs, with retail span between $25 and $85. (4 pp.)

AIA FILE NO. 35-N-4

MFR: HOWARD MILLER CLOCK CO.

Circle 347

GARAGE LIFTS

Recent folder offered to architects and others interested in design and operation of automobile repair shops. Concerned with quantity and location of auto and truck lifts, folder provides diagrams of typical service shop layouts. Locations of lifts for various services performed are shown and keyed to a guide describing types of work for which various lifts are best suited. General recommendations for selection and maximum efficiency also included. (4 pp.)

AIA FILE NO. 33-C

MFR: ROTARY LIFT CO., DIV., DOVER CORP.

Circle 348

SILICONE REFERENCE

Engineering guide to silicone materials which meet electronic requirements now available. Excellent and comprehensive guide explains how various physical forms of silicones contribute to reliability, miniaturization, modularization and environmental protection; increase serviceability over wide extremes of temperature; and aid value engineering. Illustrated handbook contains engineering data and processing information on silicones; details important electrical and mechanical properties of silicones most useful in electronics; describes typical applications in every area of use. (12 pp.)

AIA FILE NO. 25-A-3

MFR: DOW CORNING CORP.

Circle 349

ADHESIVES CATALOG

Illustrated catalog available, containing application and properties information on line of adhesives, coatings and sealers for residential, commercial, industrial and institutional building construction. Among line are adhesives for installing ceramic wall and floor tile, insulation, decorative laminates and wood block flooring. Polysulfide rubber sealers for curtain wall, masonry and prefabicated metal structures also included. (12 pp.)

AIA FILE NO. 24-B

MFR: ADHESIVES, COATINGS AND SEALERS DIV., MINNESOTA MINING AND MFG. CO.

Circle 350

your best buy from any angle ...CORDLEY

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No matter how you look at it, the best criterion by which to judge a water cooler is the manufacturer's *long-term reputation* for service and satisfaction. Cordley has been the first name in water cooling since 1889 ... as proved by the fact that more than a million Cordley Coolers have been sold during that time.

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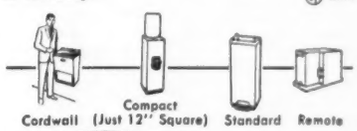

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Circle 135 for further information

ABSTRACTS

Architecture and the arts

From an address by John Noble Richards, FAIA, now past president of The American Institute of Architects on the occasion of the Gold Medal Inaugural Dinner of the Architectural League of New York.

". . . Our time is burdened with problems of crushing magnitude. I need not enumerate them—the problem of survival in a period of world-wide ideological conflict . . . the problem of harnessing atomic energy, not for destruction, but for the good of man . . . the problem of satisfying the rising hunger for food and human dignity among the people of the world . . . and the new problems of the space age.

"Nor need I point out that the complexities of all these problems and our growing realization that there are no absolutes, no black and white, no good and evil—that our new awareness of the relativity of all things—often give us a sense of frustration.

"And this sense of frustration seems to lead to apathy and—yes—growing moral corruption. . . .

"A better, a more liveable, a more beautiful human environment is our first priority today. We can no longer afford to needlessly add to our frustrations with ugliness, slums, traffic jams and congestions. We may not be able to solve the problems of the world for a long time. But we can and must solve the problems of our cities, of our man-made environment. . . .

"The problem of the rehabilitation of cities—be it west-side New York, Washington's southwest, Detroit's waterfront, or Toledo's downtown, are no longer just problems for these cities alone. America has become an urban society. Our cities are a national problem. . . .

"We are again realizing Vitruvius' three conditions of 'well building.' For architecture can never be a commodity or function alone. Nor can it merely be commodity and firmness—that is engineering.

"The third condition is as essential as the other two—delight.

"Joseph Conrad has put it very well: 'Efficiency of a practical, flawless kind may be reached naturally in the struggle for bread,' he said. 'But there is something beyond—a higher point, a subtle and unmistakable touch of love and pride beyond mere skill; almost an inspiration which gives to all work that finish that is almost art—which *is* art.'

"We see much of this in the buildings and art works whose creators we are honoring here today.

"These buildings, I am sure, are not merely the products of a few isolated creative minds. They are the response to a growing desire for beauty among the American people. There is increasing evidence of this.

"One instance is a recent ordinance by the city fathers of Philadelphia. In that city, one per cent of the construction cost of every public building will henceforth be devoted to some art work to enhance that building.

"Another example is the appointment of an art advisory council on the arts to assist the New York Housing Authority in introducing art works into its projects. . . .

"These and other developments around the country are the first robins heralding a new spring in the building arts. But I think it is far too early as yet to pat ourselves on the back and to talk about a new renaissance.

"For just as good architecture, as Vitruvius said, requires commodity, firmness and delight, so does art in the city, the real integration of art into our man-made environment, have three conditions. They are:

"One—the willingness and ability of the architect and planner to work with the artist. Two—the willingness and ability of the artist to work with the architect and planner. And, three—public support. . . .

"There are still far too many architects who, as Walter Gropius has put it, 'can only work in exalted isolation.' 'Slow and painful,' says Gropius, 'are the attempts at seeking points of contact again after the long alienation between the different branches of the arts.'

There are still far too many architects for whom art—the sculpture, the artistic landscaping, or the mural—are a mere afterthought. When the building is all done they will go to a painter and say, 'Here, fellow, is a wall. Put something pretty and colorful on it.'

"It doesn't work that way. Integration of the arts with the building must begin at its very inception. We need the artist during the earliest stages of design, just as much and just as early as the structural engineer and other collaborators. Otherwise we end up with mere decoration at best.

"But the fault is not all with the architect.

"Our artists, too, are still largely absorbed in their own exalted isolation. Many of them work behind the forbidding walls of contempt for our society and our age. So engrossed are they in their rebellion against the salons of the beaux-arts days that they forget that for the living, pulsating, world behind these barricades of their own making, salon art is not only long dead. It is even longer forgotten.

"Rebellion is necessary. It is also often extremely creative. The pendulum must swing back and forth. But the swinging back only creates anti-art. Out of this anti-art must come a pro-art. Creative beauty is always *for* something.

"We architects, incidentally, will do well to remember this as we move from what has been called the 'flat-chested' purely functional period of the international style of architect to richer, more decorative and more sculptural forms.

"Let us never forget what we owe to the by now older masters of modern architecture. Let us not be carried away by a spirit of mere anti this or anti that. And let us not go overboard on new architectural stunts—on the merely fashionable gift wrapping of our buildings.

"I, for one, am delighted that both the Architectural League and The American Institute of Architects have at last honored Mies van der Rohe with their gold medals. The simple, crystalline beauty of his steel and glass boxes has yet to be surpassed by most of the new *brise soleils* or reinforced concrete sculptures of the new generation of architects—no matter how neo-baroque.

"But back to the artists—the sculptors and painters of contemporary America.

"What on earth are these fellows still so mad about?

"The artist today is most likely more accepted and more honored and, incidentally, also better fed and paid than in any time in history.

"Our society is a grateful and often none too critical audience. The talented designer Gyorgy Kepes put it very well in a recent issue of *Daedalus*, the Journal of the American Academy of Arts and Sciences. We have given modern art in America 'a beautiful crystalline structure in America's greatest city . . . a perfect mastery of the new beauty of architectural space,' he said.

"And our artists, Kepes continues, fill the building with 'images of torn and broken man. In its offices and corridors are paintings and sculptures

shaped with idioms in tune with the twilight spirit that created them: surfaces that are moldy, broken, corroded, ragged, dripping; brush strokes executed with the sloppy brutality of cornered men.'

"Now, don't interpret these observations as anti-modern bias. Gyorgy Kepes is himself certainly a modern, if not avant garde, artist. And I personally hold no brief for or against any contemporary art ism.

"I don't care, in fact, whether a work of art is abstract or representative; whether it is neo this or neo that.

"But it must be good.

"It must be honest.

"It must say something important and pertinent. . . .

"And there you have it—responsibility.

"It is this word, I believe, which is still lacking, or at least not sufficiently strong in the vocabulary of the building arts today. Responsibility.

"As we moved out of the eclectically overdecorated beaux-arts salons into the functional glass and steel spaces of the international style, we resolved that art was no longer to be for art's sake alone.

"For a short period art was to be a matter of social significance, a propaganda weapon for all sorts of causes, good and bad. Even today some artists still feel the need for 'a dominant social goal.' But most of us smile at that way of putting it. . . .

"I would say art *is* a social goal *in itself*. It is a matter of our responsibility to society.

"The exalted, isolated genius cannot discharge this responsibility alone. The building arts—let me say it again—require the collaboration between the master builder, the artist and the public.

"This collaboration is as much a matter of responsibility as the joint efforts of numerous experts on behalf of public health, or mental health, or the maintenance of law and order.

"And this sense of responsibility, as I tried to point out, is awakening. It cannot flourish in a spirit of rebellion against a long dead past or even social injustice. It has, I believe, but one requirement. . . .

"We must have faith in our time—the faith that our efforts on behalf of the building arts and a more beautiful man-made America can be as successful and as great as any in the periods before us.

"Quite possibly they are."

NAMES

VINCENT G. KLING, FAIA, is recognized for his contribution to the advancement not only of design standards, but also of standards of professional practice. A director of the Philadelphia Chapter, American Institute of Architects, he serves on the institute's national committee on the profession. Because of his incisive and outspoken efforts on behalf of professional betterment, he was chosen as keynote speaker at the AIA 1958 national convention.

His own office is an unusual one by conventional standards of practice, both in appearance and organization. The modern drafting rooms, conference rooms, offices and library at 917 Corinthian Ave., belie the quaint facades of the town houses from which they have been fashioned over the years. Here, Kling's staff of architects, interior designers, city planners, and landscapers, work under a system of changing teams, rather than in rigid departments—a system that attracts and encourages exceptional architectural talent.

Kling is a native of East Orange, N. J. He lives with his wife, the former Caperton Booth, and two school-age sons, Vincent Jr. and Robert, in a house of his own design in Penn Valley, Pa. From 1941 to 1945, he served as an aviation officer in the United States Naval Reserve. He is a trustee of the Fontainebleau Fine Arts and Music Schools Assn., Inc., and of the Episcopal Academy in Overbrook. He is a director of the Alumni Assn. of the School of Architecture of Columbia University and a member of the industrial and professional advisory council to the College of Engineering and Architecture of Pennsylvania State University. He is a newly appointed member of the American Institute of Architect's committee on hospitals and health. He is also a corporate member of the Museum of Modern Art.

Kling is a graduate of the Columbia University School of Architecture, where he established a precedent by winning seven of the ten awards available to architectural students. He holds a Master of Architecture degree from the Massachusetts Institute of Technology. His first building, a beach house in Mantoloking, N. J., was one of 13 houses chosen by the Museum of Modern Art, N. Y., for its first major exhibit of contemporary American architecture in 1944. He is perhaps best known for his design of the Lankenau Hospital, Overbrook, Pa., which earned for him the 1954 national first honor award in hospital architecture of the American Institute of Architects.

This distinction is one of 65 national and local awards and honors conferred on Kling buildings to date. The list includes three top annual awards of the Philadelphia Chapter, American Institute of Architects; three top annual awards of the Pennsylvania Society of Architects; 14 annual awards of merit of the New Jersey Society of Architects; and seven award citations in *Progressive Architecture* magazine's national annual design awards program.

Kling himself was recipient of Philadephia's 1959 Arts Festival Award. In February 1960, he was elected a member of the College of Fellows of the American Institute of Architects, an honorary lifetime office held by only two per cent of the corporate membership. He enjoys the added distinction of being youngest of the 42 Fellows named at that time.

The architectural practice of Vincent G. Kling was established in Philadephia in 1946 when at the age of 30, Kling came to this city to design the new Institute for Cancer Research in nearby Fox Chase, Pa. Since that time, his staff has grown to number more than 100 persons, and the total value of projects executed by his office has approached the $225,000,000 mark.

The U. S. Embassy office building now near completion in Quito, Ecuador, was designed by Kling under a recent State Department program that employs American architects to design U. S. embassies abroad. Kling's current commissions include a complete new civic center for the City of Norfolk, Va., (in association with the Norfolk firm of Oliver and Smith) and new office headquarters in Passaic County, N. J., for the American Cyanamid Co. The office is engaged in architectural design of two major power projects: The Paradise (Ky.) steam plant of the Tennessee Valley Authority, destined to be the world's largest; and the Dez River hydroelectric plant and irrigation dam in Khuzestan Province, Iran.

Kling has played an active part in the center-city renaissance that has placed Philadelphia in the forefront of city planning efforts throughout the country. As consulting architect to the City Planning Commission, he helped to develop the original Penn Center Plan in 1952. Subsequent realization of important elements of this plan—particularly, the continuous three-block underground concourse penetrated by open courtyards—is due largely to his efforts as architect to the Pennsylvania Railroad and the Union News Co.

He has also served as consulting architect to the City Planning Commission on plans for the Triangle and Washington Square East redevelopment areas. He has been retained by the City of Philadelphia to design the new Municipal Services Building projected for Reyburn Plaza.

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EDITORIAL

Hooray for Hollywood! Well, it's summer in New York and soon it will be hot enough to fry the proverbial eggs on the stylobate of the Metropolitan Museum. This is Gotham's traditional "time of the cuckoo" in that we have an annual rash of "man-bites-dog" stories and similar phenomena that are the hallmarks of an advanced urban culture. Yet, somehow, this time we have been topped by that wonderfully googie-drop-dead-land of the ultra-fantastic, the fractured hyperbole, land of the neurotic Adult-Western hero, of Forest Lawn, Disneyland, and the Bel Air poolside conference—the American cinematropolis—Hollywood! Accordingly, we thought we would like to share our Christmas-in-July fun with you.

It seems that during the next few weeks, the second most famous house in the nation will be given a high, wide and handsome showing both in breathtaking cinemascope and glorious technicolor on the silver screens of most of the popcorn-peddling palaces of this hollowed republic.

This fabled house, completed only two months ago (according to our usually reliable source) is the first genuine, complete house ever built for a motion picture and will probably be viewed by more people than have seen the White House in its history. In the memory of the inveterate movie-goers, not even the most profligate and sybaritic of Hollywood film producers has ever built a real house on a real site for one of their productions. As a rule, sets are built to represent parts of a house as they are required and most interior scenes are completed in a studio. Even the famed dream house of Mr. Blandings was simply a studio set. But this time, the story line of one of the newest, major films called for the building of a complete, luxurious house as an integral part of the drama. The film is the forthcoming Columbia Pictures release, *"Strangers When We Meet."*

According to *our* man Stanley, it deals with the attempt by an architect (played by Kirk Douglas) to design "artistic homes rather than develop industrial communities."

In the film, the construction of the house—step-by-step—is geared to a torrid love affair between Architect Kirk Douglas and Kim Novak with the final scenes filmed at the house the day it was completed. In order to keep pace with the romantic race of the plot, our informant says that some portions of the house had to be built almost overnight.

The house receives fifth-place billing in the movie which features Kim Novak, Kirk Douglas, Ernie Kovacs and Barbara Rush. The building was designed by the well-known Los Angeles architectural firm of Victor Gruen, AIA and Associates.

Movie-goers will get an actual "hammer-and-nail" operational close up of the progressive steps of the design and construction of a "two-story-six-level luxury house." This should warm the timbers of our friends of the National Lumber Manufacturers Association.

We haven't seen this celluloid opus as yet. We sincerely look forward to it. We are appreciative and thankful that an architect can occasionally be a romantic hero instead of the villain of the piece. A rash of this kind of movie making will do for architecture and the architect what the Dr. Kildare movie series did for medicine.

At this moment, all we can add is to say to Architect Kirk Douglas: "Nice work! You've *got* it!" However, we are left in a slight quandry. With the presence of the beauteous Kim Novak, how in blazes did Kirk Douglas find the time to write the specification? *JJC*

Film star Kim Novak, SAG, poses in front of the Victor Gruen, AIA-designed house which co-stars with her and 'Architect' Kirk Douglas, SAG, in the newly released film, "Strangers When We Meet."

BANK OF AMERICA'S DOWNTOWN SAN FRANCISCO BUILDING | *project*
BANK OF AMERICA | *client*
WURSTER, BERNARDI AND EMMONS | *architects*
L. H. AND B. L. NISHKIAN | *structural engineers*
GAYNER ENGINEERS | *mechanical and electrical engineers*

General description of program

The Bank of America's downtown San Francisco building, now under construction at Market and Van Ness streets, will house under one roof the service departments for all metropolitan branches in the Bay area, and, in some instances, will serve the entire statewide banking organization. The building is eight stories high, including a mezzanine and basement, and is structurally designed for future expansion to 13 stories. It will have the largest usable floor space of any office building in the city when completed in mid-1960.

General features

The building is of reinforced concrete, and is enclosed with alternating panels of precast, prestressed concrete with integral quartz mosaic (a process developed especially for this project), and gray glare-reducing glass in aluminum frames. Both glass and concrete panels reach from floor-to-floor, reducing the number of joints and inherent waterproofing problems. West side of building has 29 per cent glass, north side 50 per cent glass, east side 41 per cent glass, and south (property line) side has no windows. Glass area represents maximum heat gain of about 13 to 15 per cent of capacity of cooling equipment. Synthetic fabric draperies at windows aid in sun control in addition to glare-reducing glass. The base course, which is the entire first floor, is sheathed in alternating panels of red and blue granite. Penthouses are covered with black-gray unglazed ceramic tile. The building is equipped with a roof-mounted window-washing rig, and all exterior surfaces will require minimum maintenance care.

Most persons working inside the building and passengers riding escalators will see through to the outside —alternating glass and concrete panels from top to bottom of building. Colors in the lobbies of each floor are keyed to the mosaic columns between the escalators. The mosaics follow a full spectrum—blue on ground floor, purple on second, etc. The grand lobby end-wall mosaic design simulates rich red and gold fabric.

The interior design is rigidly simple and totally flexible. All space divisions are accomplished by movable partitions of glass and steel, except for specified areas. In those areas where mechanical services are not required, all interior columns are left in plain concrete, painted.

The ceilings are treated for adaptability to possible changes in use of space below. Two-by-four-foot aluminum T-bar grids serve as basic framework, and contain acoustical material, flush fluorescent lighting, flush air diffusers, and sound equipment.

There are twin escalators from the main lobby through the building to the eighth floor. All escalators can be reversed at push of button, doubling capacity at peak morning and evening hours. Five thousand persons an hour or 80 per minute may be moved via escalator. In addition, there are two electronically guided automatic passenger elevators, one freight elevator, and a vertical mail lift operating from the main mail room in the basement.

Plan elements

Three drive-up windows (entrance on South Van Ness) and nine walk-up windows in the Market street glass enclosed lobby, provide auxiliary service to the bank's Ninth and Market branch. Facilities for interior customer parking are provided on ground floor and mezzanine.

Assignment of space for services and installations has been designated as follows: *BASEMENT*, central cash vault, mail department, waste paper storage, and drive-up banking; *GROUND AND MEZZANINE*, employment office and auxiliary service banking office; *SECOND FLOOR*, Addressograph department, hospital, mechanical department, stock transfer department and cafeteria; *THIRD FLOOR*, auditing department, central office, and ERMA; *FOURTH FLOOR*, regional collections, payroll department, tabulating department and Travellers Cheque department; *FIFTH FLOOR*, accounting, central files, communications center, data processing, systems and equipment research; *SIXTH FLOOR*, centralized operations, purchasing and supply department, reproduction department and Travellers Cheque department; *SEVENTH AND EIGHTH FLOORS*, not assigned; and *PENTHOUSE LOUNGE*.

Structural notes

Flat slab, reinforced concrete construction is designed with bay pattern of 25 by 26 feet. This was an outgrowth of most efficient use of ground and mezzanine floors for parking facilities. Reinforced concrete framing was necessitated by 250 lb. live-load capacity of most floors. There is allowance for electrical loads as high as 600 kw per floor, and a total of 1,664 tons of air-conditioning equipment.

There is infinite access space in third, fourth and fifth floors. The second floor has usual concrete slab with floor on metal pedestals 12" above the slab; the space left accommodates electrical wiring and present and future air-conditioning. Space also serves as plenum for air-conditioning return.

Electrical system

The initial electrical load of 6,735 kw will eventually go to 13,470 kw; one of the largest electrical loads in a western U. S. commercial building. The building will be served with 265/460-v, three-phase, four-wire wye system. Primary distribution will be through aluminum (chosen for comparatively light weight) bus bars running from basement switchboard through two-riser shafts to top of building. Local power failure would put out only one-half of building, as emergency generator provided. About 20,000 feet of underfloor duct per floor provided for electrical and communication wiring. The lighting level of 75 footcandles throughout is an important part of the electrical load and contributes to heat problem calling for extensive air-conditioning.

HVAC

A low temperature differential, high air volume system of low velocity type air-conditioning was selected. It will use low outside air temperature available for air-conditioning use during most of year. Among reasons for choice of low velocity system was—high velocity system would require high horse power to deliver full volume of air; limiting depth of ceiling restricts diameter of round duct work.

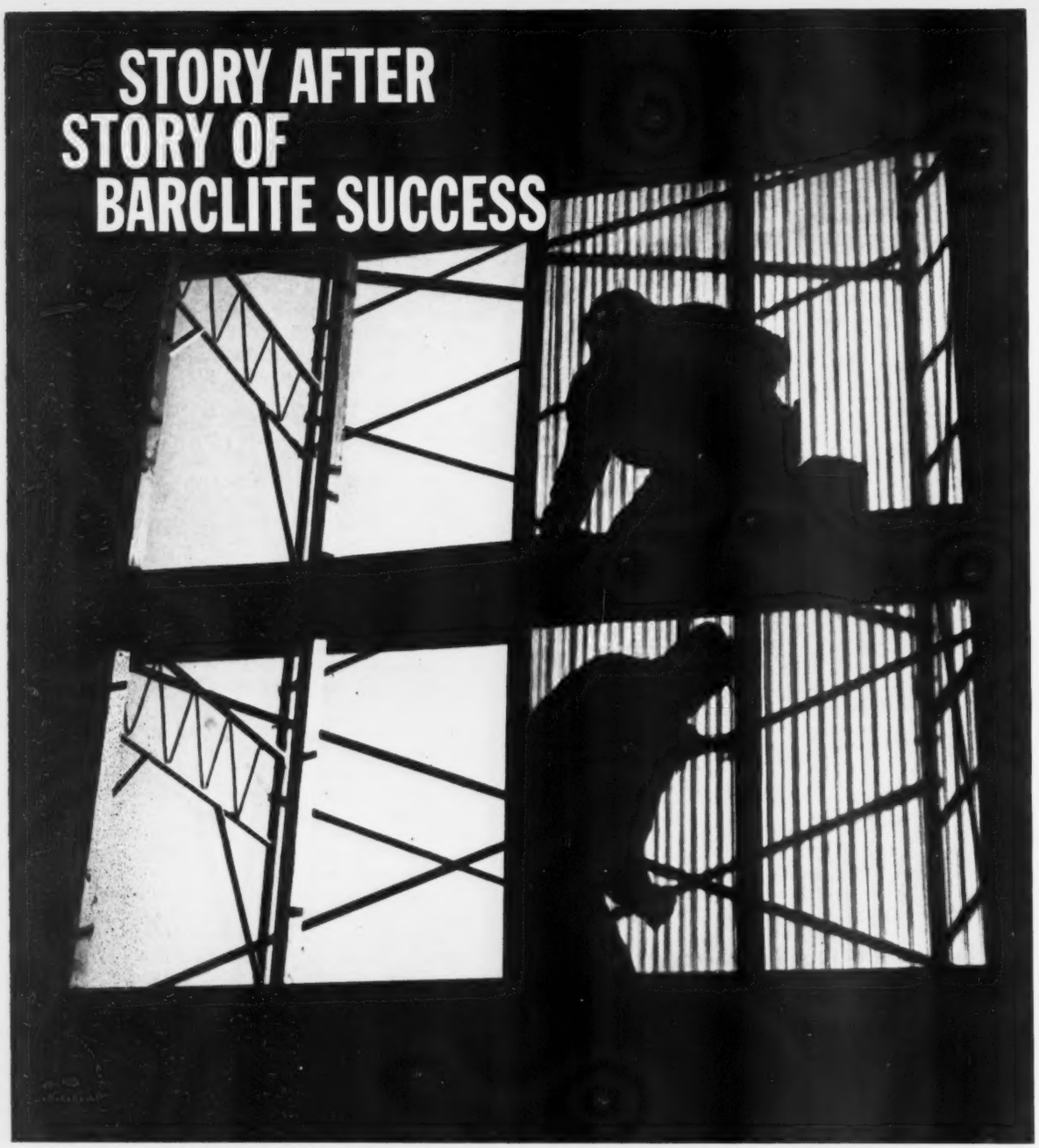
All-air type air-conditioning system installed; basic system is double hot and cold duct. Two main systems located on sixth floor distribute hot and cold air to second through eighth floors. Each main system feeds three master temperature control zones on each floor; total of four peripheral master zones and two interior master zones on each floor.

The basement and ground floor are served by a conventional system with equipment located in basement. Garage exhaust system exhausts basement, first floor and mezzanine parking space.

The cooling plant consists of two 550-ton centrifugal chilling machines and one 595-ton steam absorption machine, giving a total of approximately 1,600 tons of air-conditioning for building. Chilled water is circulated by conventional horizontal split-case pumps to chilled water coils and to electronic computer centers. Plant may be closed down in three stages. Heat dissipated by 5,000-gallon-per-minute cooling tower on roof. Two 6,559,000 BTU-per-hour gas and #5 oil-fired boilers in basement. There is provision for future addition of third. Boilers are package Scotch marine (steam) type with forced draft. Basic heating system is vacuum return except for gravity return absorption chiller. Twenty thousand gallons of fuel oil is stored in tanks below basement floor level.

Areas and cost

Gross building area	619,430 sq. ft.
Net usable area	485,688 sq. ft.
Cost including land	$15,000,000



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DOCUMENTS

The documents listed below are available through the associations and agencies cited. All orders should be directed accordingly.

The American Institute of Architects, *Department of Education & Research, Documents Division, 1735 New York Ave., N. W., Washington 6, D. C.*

Research for Architecture *Proceedings of AIA-NSF Conference, Ann Arbor, Mich., March 1959. 128 pp., $3.00.*

Contains six prepared papers, 12 prepared discussions, reports on discussion groups, assembly discussions and condensed list of suggested research projects.

Catalog of Publications and Documents. *September, 1959. 6 pp. No charge.*

Listing of publications of AIA which cover three categories: (1) contract documents and legal forms; (2) architectural accounting systems; (3) periodicals and other publications; and (4) public relations materials.

National Electrical Manufacturers Assn., *155 E. 44th St., New York 17, N. Y.*

1960 Guide to NEMA Standards Publications. *18 pp. No charge.*

Contains descriptions of all existing NEMA Standards publications. Included are brief descriptions of 20 new books produced last year.

American Standards Assn., *10 E. 40th St., New York 16, N. Y.*

American Standard Methods of Determining Areas in Hospitals and Related Facilities, *Z65.4-1959. $.50.*

Developed by architects, hospital administrators, and others concerned with hospital design and administration, this standard includes methods of determining gross area, circulation areas for patients and visitors, and departmental areas. Method for determining circulation area of a hospital of particular interest to architects. Provides a means for logical comparison of the areas used for general traffic and by the public with those required for the actual operation of a hospital.

BOOKS

The Dymaxion World of Buckminster Fuller *by Robert W. Marks. New York: Reinhold Publishing Corp., 1960. 232 pp. with illustrations, photographs, plans and drawings. $12.00.*

This is the first comprehensive presentation of the life and work of perhaps one of the most inventive and professionally controversial men of our time—Buckminster Fuller. According to author Robert Marks, his subject is a "protean maverick." And indeed he is. Fuller has long been a thorn in the side of conventional architects and industrialists. Fuller's *Dymaxion* idea has been on the scene for some time in which he has sought to attack the problems of shelter and transportation by utilizing structural design from the point of view of realizing maximum performance from a minimum of required imput—whether it be men, materials or energy, itself.

Whatever one may think of Fuller the man, the inventor, the designer—one cannot chose to ignore his contribution. There is a huge fascination to be had with the wide gamut of his ideas—from his aviation designs to his geodesic structures. He is an important exponent of the technological advances of our time. This book belongs on the shelf of those persons who wish to comprehend the "rationale" of this type of applied structural theory and technology.
JJC

Writing in Industry, *Volume I, edited by Siegfried Mandel. New York: Plenum Press, Inc., 1959. 121 pp. $2.75.*

Book is based on the principle that the responsibility of good communication of ideas rests with the specialists. One of the chapters concerns the techniques of proposal writing which calls for precise exposition of technical data; another concerns design problems in engineering publications.

Conversion Tables *of U.S.A. and British Units into Metric and Vice Versa. Chicago: European Technical Coverage, Inc., 1960. 48 pp. $2.56.*

Pocket-size reference contains conversion tables in the nine areas of temperature, volume, weight, liquid volume, pressure, heat units, units of length and surface and production. For rapid conversions, the tables have stepped-down thumb indexes. The user can quickly locate a known

(Continued on page 54)

DIGEST:19

GLOSSARY OF TERMS IN PLASTICS

The following material is a glossary of terms in the field of the architectural application of plastics. It is published with permission of the Society of Plastics Engineers, Inc., from their new publication, "Plastics for Architects, Artists and Interior Designers." This booklet, providing a comprehensive illustrated survey of building industry applications for plastics, is divided into two parts detailing use of both thermosetting resins and thermoplastics. Price of the publication is $2.00 per copy and is available from the Society of Plastics Engineers, Inc., 65 Prospect Street, Stamford, Connecticut.

Acetate Common name for cellulose acetate. Cellulose acetate is a thermoplastic resin and is prepared by treating cellulose with acetic acid and acetic anhydride in the presence of a catalyst.

Acrylic Generic term describing monomers and thermoplastic polymers of or based on acrylic, substituted acrylic, and methacrylic acids. The best known material in this group is methyl methacrylate. In monomeric or partly polymerized form, it is used for embedments.

Butyrate Common name for cellulose acetate butyrate. Cellulose acetate butyrate, a thermoplastic resin, is a mixed ester of cellulose made by treating cellulose with a mixture of acetic and butyric acids and anhydrides. Often used for tough mouldings and extruded pipes.

Casting resins Any resin capable of being cast. To cast is to form a plastic in a mold of a given shape and let it harden or cure without more than atmospheric pressure. Most common casting resins include polyester, epoxies and acrylics.

Celluloid Plasticized cellulose nitrate. Cellulose nitrate is an ester of cellulose prepared by treating cellulose with a mixture of nitric and sulfuric acids.

Cellulose acetate See acetate.

Cellulosics Plastics containing or relating to cellulose. Oldest of the synthetics.

Color stability The ability of a material to retain color or resist fading after long exposures to differential weathering and strong (sun) light.

Copolymer vinyl Product formed by polymerizing a mixture of two vinyl monomers, so that each polymer chain contains molecules of both monomers. Vinyl chloride-vinyl acetate copolymers are used in making floor tiles.

Core Internal member of a sandwich construction. Cores in the plastic trade are usually made of wood or wood derivative, foam or honeycomb (paper or aluminum).

Cure To harden by chemical action or to heat-set a resin.

Curing The process during which polymerization to insolubility takes place, binding each of the main elements. This usually is referred to in connection with thermosetting resins and with certain cast thermoplastic materials.

Durometer A measure of hardness in a rubbery or semi-rigid material; also instrument to measure hardness.

Embedment An embedment is a total—an entity; it is the encasement of an object within a given mass or sheath of a plastic material. Embedments are usually decorative in nature and are always cast or molded in a transparent plastic material. Embedments can be medical, biological or industrial as well as purely aesthetic. Electrical units thus treated are termed encapsulated.

Epoxy Generic name for a group of thermosetting resins which originally included products made by the condensation of bisphenol and epichlorohydrin, but which now are also made by other means. Uncured epoxy resins are characterized as having two or more epoxide groups per molecule.

Ethyl cellulose A thermoplastic resin made by the ethylation of sodium cellulose.

Exotherm The quantity of heat evolved during the course of those chemical reactions which evolve heat. Polymerization reactions are exothermic reactions.

Fillers Inert materials added to plastics to add bulk, control shrinkage or modify physical properties.

Foamed phenolic Phenolic resin in cellular form—the resinous phenolic has been expanded and cured in sponge-like form.

Glass fiber reinforced Thermosetting resin which has been reinforced with fiber or filaments of glass, jute, sisal, burlap, nylon, etc. The most common reinforced resins are polyesters and epoxies.

Glaze To apply a semi-transparent color to a surface to give it depth and make it glossy.

Glitter A gilted or silvered crushed mica flake used to add sparkle to transparent plastics.

Impact resistance (Toughness) The ability of a material to resist or withstand impacts or blows. This is usually determined by such tests as the Charpy or Izod Notch test.

Inflated To swell with air or gas, expand, extend—usually referred to in relation to inflated structures where the bag is kept aloft by a small air pump.

Laminate Process of combining thermosetting products consisting essentially of fibrous sheet material such as cellulose paper, asbestos paper, cotton fabric or mat, wood veneer, nylon or glass fabric which are impregnated or coated with a thermosetting resin binder and are consolidated under high heat and pressure to form hard solid products of high mechanical strength.

Linear polyethylene A group of thermoplastic polymers of ethylene polymerized under such conditions that polymer chains are relatively free of side branches. Density: around .94.

Melamine Common name for melamine-formaldehyde resins and compounds. Melamine-formaldehyde is an amino-type thermosetting resin made by the condensation of melamine (the amide of cyanuric acid) and formaldehyde.

Methyl methacrylate A thermoplastic polymerization

product of methacrylic acid esters. It is used to make casting of molded compounds. It has exceptionally good optical properties, can be made in a wide range of transparent, translucent or opaque colors. Clear, it can be used for embedding or optical components. It is only transparent material with outstanding weather resistance record.

Methacrylate See methyl methacrylate.

Molding powders Plastic materials in varying stages of granulation and comprising resin, pigments, filler plasticizers and other ingredients ready for use in the molding operations.

Molding pellets An extruded and diced plastic material—usually pigmented—ready for use in molding.

Monofilament A continuous thread of yarn made up of only one filament; one continuous fiber.

Monomer A relatively simple chemical compound which is capable of reacting with like or unlike compounds to form polymers.

Nylon Applies to all long-chain polyamides which are the linear condensation products of dibasic acids with diamines or of amino acids.

Olefins Unsaturated aliphatic hydrocarbons having one double bond per molecule.

Opacity Quality or state of a body which renders it impervious to the rays of light.

Pastes A mixture of pigment concentrates dispersed in resin similar to that to be colored; polyvinyl chloride dispersed in plasticizer so it will still flow.

Pellets See molding pellets.

Phenolic A resin produced by the condensation of a phenol with an aldehyde—particularly of phenol with formaldehyde.

Plastisol Pourable mixture of resins and plasticizers which can be molded, cast or converted to continuous films by application of heat, e.g., polyvinyl chloride paste.

Polyester Reactive product formed by the esterification reaction between polyhydric alcohols and polybasic acids. This includes a large class of materials known as polyester or alkyd resins. Polyester refers to an unsaturated polyester base resin dissolved in a co-polymerizable monomer.

Polyethylene A thermoplastic resin made by the polymerization of ethylene.

Polymer Product formed by the chemical reaction of monomer molecules with each other characterized as either chain polymers (thermoplastics) or three-dimensional space polymers (thermosets).

Polymerization A chemical reaction in which the molecules of the monomer are linked together to form high molecular weight components.

Polystyrenes A clear thermoplastic resin, polymer of styrene, usually derived from ethylene and benzene. It can be molded, extruded, or otherwise shaped into articles with a wide variety of uses. Can also be compounded with rubber, resulting in a translucent high impact styrene material.

Polyvinyl chloride (PVC) An odorless, tasteless, nontoxic white or clear thermoplastic resin with good chemical resistance and very low water absorption.

Prefoamed epoxy An epoxy which has been foamed by a patented process into logs up to 2′ x 1′ x 8′ in densities ranging from 3 to 20 lbs.

Refractive index The ratio of the velocity of light in a vacuum to its velocity in a substance. This term is often used in reference to the bending of light rays entering a substance. Such bending determines the degree of opacity, translucency or transparency of the substance.

Resin A solid or semi-solid amorphous organic compound or mixture of such compounds with no definite melting point and no tendency to crystallize; a common name applied to most uncured thermosetting liquid materials. Most resins are polymers.

Sandwich constructions Panels composed of a lightweight core material such as honeycomb, balsa wood, foamed plastic, etc., to which two relatively thin dense high strength faces or skins are adhered such as polyester or epoxy reinforced fiberglass, plywood. metal, etc.

Terrazzo A kind of flooring made of small chips of marble set irregularly in cement and polished smooth. In plastics, similar effects are obtained by setting molding pellets in a resin matrix, then polishing.

Tessera Small pieces of marble, glass or the like, having a square face, and used in mosaic work. In plastics, the molding pellets can be considered as tessera when used in the mosaic and terrazzo-mosaic treatments.

Thermoplastics A family of plastics which is capable of being repeatedly softened by heat and hardened by cooling. These include such commonly known materials as acrylics, cellulosics, polyethylenes, polystyrenes, vinyls, nylons, etc.

Thermosettings A family of plastics which will undergo or has undergone a chemical reaction by the action of heat, (reacted by a catalyst) light, ultraviolet, irradiation, etc. Once this change has taken place, the plastic becomes infusible and insoluble. Thermosets include the polyesters, epoxies, phenolics, alkyds, melamines, and ureas.

Unreinforced. Without reinforcement. This term is used in the plastic field to denote areas where a thermosetting material has been cast or built up without the usual fiber reinforcing layers.

Urea-formaldehyde A thermosetting resin compound consisting essentially of urea formaldehyde resin combined with cellulose filler.

Vacuum forming Method of sheet forming in which a thermoplastic sheet is first clamped into a frame, then heated, and finally drawn down over or into a mold by vacuum below and atmospheric pressure above the sheet.

Vinyl Common term for a group of resins or plastics formed by the polymerization of chemical compounds containing an ethylenic double bond. Vinyl resins include polyvinyl alcohol, polyvinyl chloride, polyvinyl butyral, vinylidene chloride and even polystyrene—most commonly polyvinyl chloride.

(Poly) vinyl butyral Presently the resin used in safety glass interlayer; also combined with phenolic resin as a strong thermosetting adhesive.

Vinyl-nylon Nylon fabric with flexible polyvinyl chloride coating.

Water-white epoxy A low viscosity, exceptionally clear epoxy used in casting, embedding or decorative laminating.

Water-white polyester A low viscosity, exceptionally clear polyester used in casting, embedding or decorative laminating.

Weatherability Ability to withstand outdoor exposure.

Bibliography

Technical Data on Plastics, February, 1957. Washington, D. C.: Manufacturing Chemists' Assn., Inc.

Dickinson, Thomas A., *Plastics Dictionary*. New York: Pitman Publishing Co., 1958.

Modern Plastics Encyclopedia Issue 1959. New York: Breskin Publishing Co., 1959.

Webster-Merriam Collegiate Dictionary. Springfield, Mass.: G. & C. Merriam Co., 1955.

"A Glossary of Plastics Terms." Bartlesville, Okla.: Phillips Chemical Co., 1958.

BOOKS

(Continued from page 53)

value in any particular table and on the same horizontal line find the equivalent values in the other systems.

Design, *Volume I of Data Book for Civil Engineers, Third Edition, by Elwyn E. Seelye. New York: John Wiley & Sons, Inc., 1959. 683 pp. $24.00.*

Material has been brought up to date. Covers structural engineering, pavements, highways, airports, bridges, cathodic protection, waterfront structures, drainage, sanitation, and water supply purification and distribution. Purports to provide sufficient information to enable the engineer to design any civil engineering project without the need for other references.

Simplified Design of Reinforced Concrete, *Second Edition, by Harry Parker. New York: John Wiley & Sons, Inc., 1960. 303 pp. $6.50*

This standard reference on reinforced concrete has been revised to incorporate the latest developments in the field. It has been prepared in compliance with the recommended unit stress and design procedure and requirements as given in the current publication of *Building Code Requirements for Reinforced Concrete, (ACI 318) of the American Concrete Institute.*

Theory of Plates and Shells, *Second Edition, by S. Timoshenko and S. Woinowsky-Krieger. New York: McGraw-Hill Book Co., Inc., 1959. 580 pp. $15.00.*

An advanced treatment of structural elements in which one dimension (the thickness of a plate or shell) can be considered as small in comparison with the other dimensions. Among the many changes and additions made in the enlarged edition is the inclusion of three new chapters: (1) on bending of plates resting on an elastic foundation; (2) on bending of anisotropic plates; and (3) on certain special and approximate methods used in plate analysis.

Radio Stations Installation, Design and Practice *by G. A. Chappel. New York: 1959. 248 pp., illus. $7.50.*

Intended for station design engineers, contains recent design data organized in a usable, coordinated form. Various design methods now in use are presented with criteria for selection and an appraisal of

their usefulness in a given situation. Some of the problems covered are soil conductivity, obstruction in the propagation path of aerial systems, special electrical wiring, automatic devices for remote, unattended stations, etc. Contains appendix which shows how to set up a logical fault-finding system. Reference throughout is to British standards.

Instrumentation in Scientific Research; Electrical Input Transducers *by Kurt S. Lion. New York: McGraw-Hill Book Co., Inc., 1959. 324 pp., illus. $9.50.*

Broad survey offers engineers and others a reasonably complete collection of the existing basic methods and systems used as input transducers in electrical instrumentation. Stress is accordingly on physics and methodology rather than on latest techniques, although a fair amount of technical detail is given. Only a moderate mathematical knowledge is assumed.

Estimating Structural Steel Including Structural Aluminum and Miscellaneous Materials *by George A. Saunders. New York: McGraw-Hill Book Co., Inc., 1959. 274 pp., illus. $9.50.*

A reference book and guide for estimating construction costs. Covers broadly estimating procedures both for shop fabrication and erection of buildings. Mainly intended for contractors but of interest to architects and engineers.

Aerial Photographic Interpretation; Principles and Applications. *New York: McGraw-Hill Book Co., Inc., 1959. 462 pp., illus. $17.50.*

Comprehensive, descriptive text manual which treats the earth's surface as an integrated physical and ecological whole. Both theoretical and practical guidance is given in recognizing and interpreting significant characteristics of air photo patterns and producing from them clear and reliable conclusions. Photographs, drawings, maps or tables appear on almost every page.

Internal Stresses and Fatigue in Metals, *Proceedings of the Symposium on Internal Stresses and Fatigue in Metals, Detroit and Warren, Mich., 1958, edited by Gerald M. Rassweiler and William L. Grube. Princeton, N. J.: Elsevier Publishing Co., 1959. 451 pp., illus. $11.00.*

These papers by a distinguished group of international scientists and engineers consider and interrelate the phenomena of internal stresses and fatigue from the points of view of solid state physics and of engineering. Approach centers on the importance of crystal imperfections and stresses in the development of fatigue in metals. Illustrations and up-to-date references.

Welded Interstate Highway Bridges *edited by James G. Clark. Cleveland: The James F. Lincoln Arc Welding Foundation, 1960. 269 pp., illus. $2.00.*

Covers welded bridge designs awarded in the Lincoln Foundation's recent design competition. Designs include examples of continuous, simple and cantilever plate girders; two-hinge and three-hinge arches; conventional and orthotropic plate box girders; and double leaves bascule.

Nondestructive Testing Handbook *edited by Robert C. McMaster. Edited for the Society of Nondestructive Testing. New York: The Ronald Press Co., 1959. Various paging, illus. $24.00.*

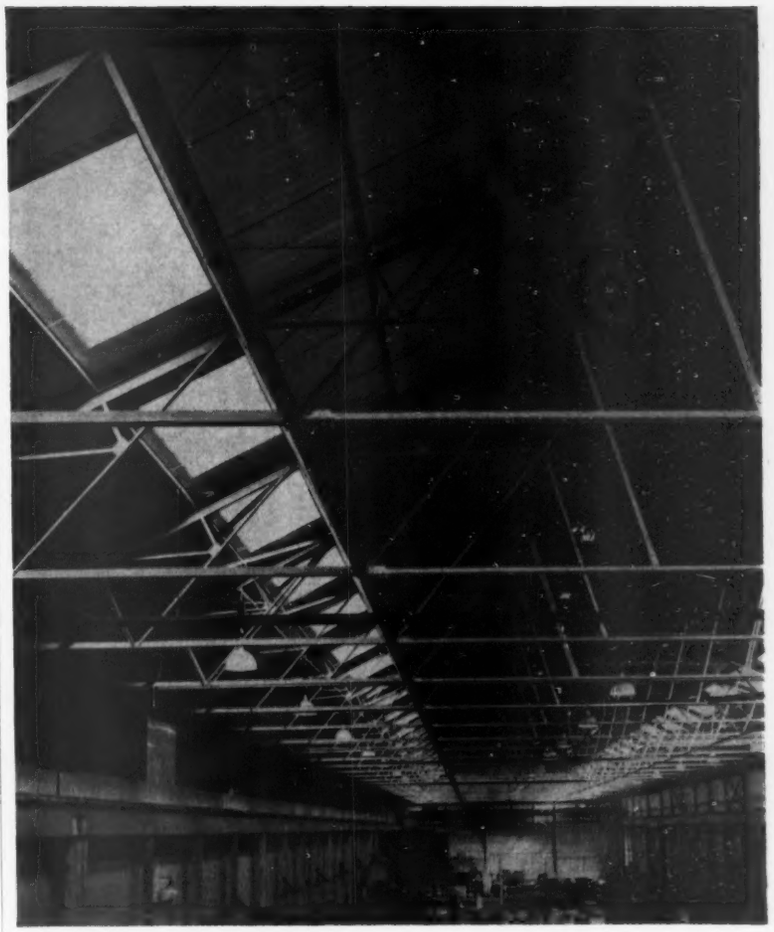
This major handbook includes all important information, principles, policies, and practices in the field of property and performance testing. Numerous tables, charts, diagrams, photographs, drawings, and other illustrative materials.

Information Transmission, Modulation, and Noise; a Unified Approach to Communications Systems *by Mischa Schwartz. New York: McGraw-Hill Book Co., Inc. 1959. 461 pp. $11.00.*

An advanced textbook which aims to present the unifying principles underlying modern communication systems—radio, television, radar, servo, data-processing, etc. Emphasis is given to "the fundamental role of system bandwidth and noise in limiting the transmission of information." Numerous diagrams and approximately 250 problems presented.

Plumbing, *Third Edition, by Harold E. Babbitt. New York: McGraw-Hill Book Co., Inc., 1960. 646 pp., illus. $13.50.*

The present edition of this important reference has been revised mainly to apply the *National Plumbing Code,* published in 1955, to present plumbing practices, and to introduce some of the new materials and applications which have come into use since the publication of the second edition in 1950. Book is intended for architects and engineers and much of the information is directed to them in charts and graphs.



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12-30 A/E NEWS-IVA ARCHITECTS' TOUR of Brazil, Peru, Ecuador and Colombia. Contact Inter-American Visitors Assn., 15 W. 46th St., New York 36, N. Y.

20-3 ANNUAL MEXICAN ARCHITECTURAL SEMINAR TOUR: includes areas of architectural interest from Laredo to Oaxaco (for full information write Gira Arquitectura, T. H. Hewitt, Director, 2413 Driscoll, Houston 19, Tex.)

Sept. 11-16 AMERICAN CHEMICAL SOCIETY: national meeting, Statler-Hilton Hotel, New York City.

15 BUILDING RESEARCH INSTITUTE: programs committee meeting, BRI headquarters, Washington, D. C.

26-28 STANDARDS ENGINEERS SOCIETY: annual meeting, Hilton Hotel, Pittsburgh, Pa.

26-30 AMERICAN INSTITUTE OF ARCHITECTS: board of directors meeting, Las Vegas, Nev.

27-30 PRESTRESSED CONCRETE INSTITUTE: annual convention, Statler-Hilton Hotel, New York City.

Oct. 1-5 AMERICAN INSTITUTE OF ARCHITECTS: annual northwest conference, Idaho chapter host, Sun Valley, Idaho.

2-4 AMERICAN INSTITUTE OF ARCHITECTS: Gulf states regional conference, Hot Springs, Ark.

2-13 INTERNATIONAL SEMINAR ON INDUSTRIAL ARCHITECTURE: Kazimierz, Poland.

5 SIXTH ANNUAL ARCHITECTS' TOUR OF JAPAN: 24-day tour. For further information contact Kenneth M. Nishimoto, AIA, 263 S. Los Robles Ave., Pasadena, Calif.

5-7 PRODUCERS' COUNCIL, INC.: annual meeting, Drake Hotel, Chicago.

11 AMERICAN INSTITUTE OF ARCHITECTS: New York region annual convention, White Face Inn, Lake Placid, N. Y.

12-15 NEW YORK STATE ASSN. OF ARCHITECTS: annual convention, White Face Inn, Lake Placid, N. Y.

17-21 NATIONAL METAL EXPOSITION: Philadelphia, Pa.

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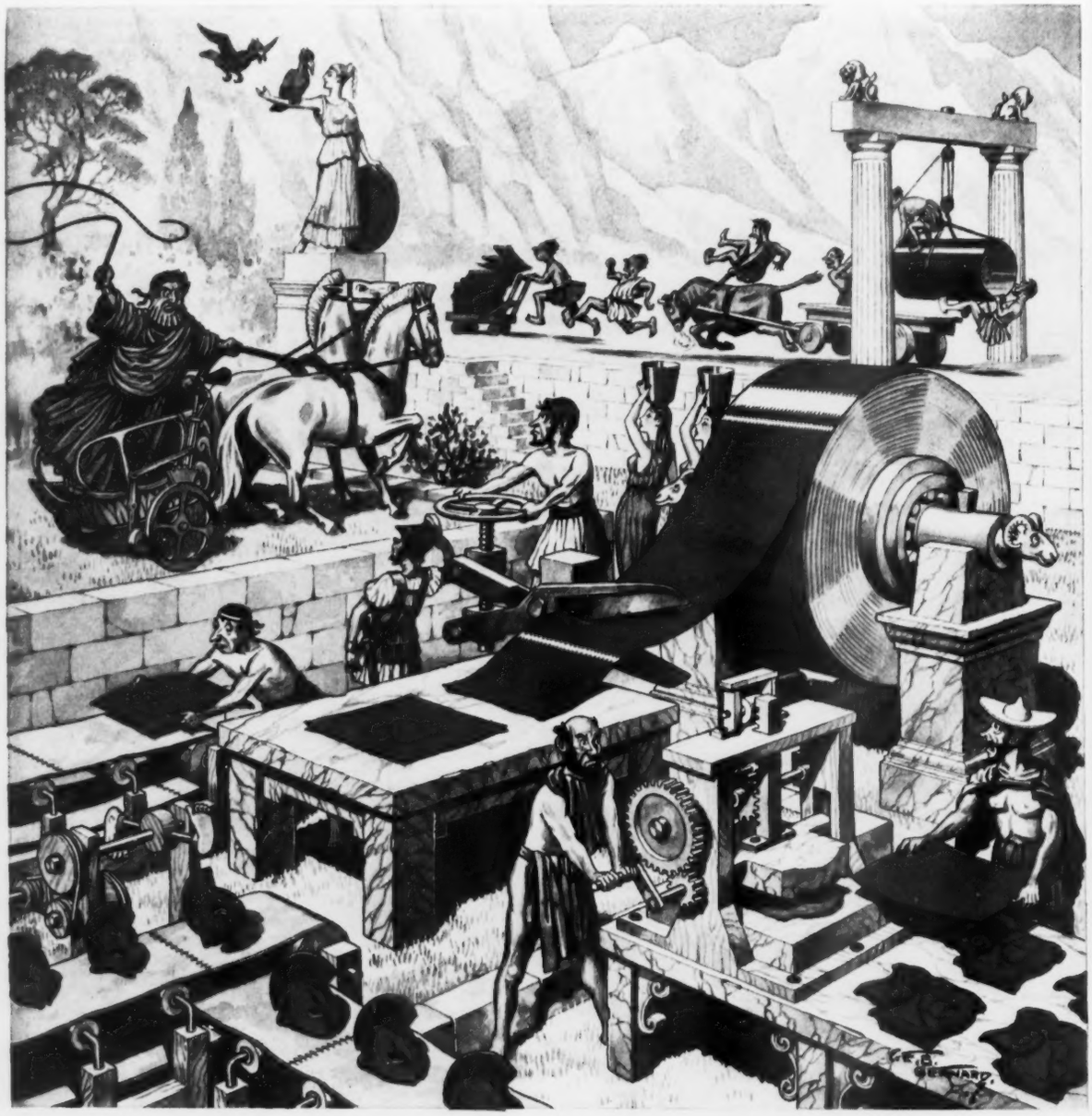

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